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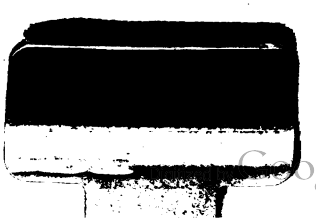

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TRANSACTIONS

OF THE

WISCONSIN
STATE HORTICULTURAL SOCIETY.

ESSAYS, DISCUSSIONS, AND REPORTS

AT THE

ANNUAL WINTER MEETING,

Held at Madison, Wis., Feb. 4-8, 1878,

AND AT THE

JUNE MEETING,

Held in Janesville, June 25 and 26, 1877.

F. W. CASE, SECRETARY.

VOL. VIII.

MADISON, WIS.:
DAVID ATWOOD, PRINTER AND STEREOTYPER.
1878.

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LIST OF OFFICERS, 1878.

PRESIDENT.

J. M. SMITH, - - - - - - - - - GREEN BAY.

VICE PRESIDENT.

C. H. GREENMAN, - - - - - - - - WAUWATOSA.

RECORDING SECRETARY.

F. W. CASE, - - - - - - - - - MADISON.

CORRESPONDING SECRETARY.

M. L. CLARK, - - - - - - - - - NEW LISBON.

TREASURER.

M. ANDERSON, - - - - - - - - CROSS PLAINS.

SUPERINTENDENT.

F. W. CASE, - - - - - - - - - MADISON.

STANDING COMMITTEES.

ADDITIONAL MEMBERS OF EXECUTIVE.

J. S. STICKNEY, Wauwatosa.
A. J. PHILIPS, West Salem.
A. G. TUTTLE, Baraboo.

NOMENCLATURE.

J. C. PLUMB, Milton.
B. B. OLDS, Clinton.
G. P. PEFFER, Pewaukee.

OBSERVATION.

Dist.	*Dist.*
1st. D. T. PILGRIM, West Granville.	7th. D. HUNTLEY, Appleton.
2d. J. C. PLUMB, Milton.	8th. J. H. FELCH, Amherst.
3d. E. H. BENTON, Oakfield.	9th. A. J. PHILIPS, West Salem.
4th. A. L. HATCH, Ithaca.	10th. G. W. PERRY, Superior.
5th. E. W. DANIELS, Auroraville.	11th. C. W. HUMPHREY, Cascade.
6th. M. L. CLARK, New Lisbon.	12th. J. M. SMITH, Green Bay.

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LIST OF MEMBERS.

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Adams, B. F.....	Madison.	Landreth, John....	Manitowoc.
Allen, Prof. W. F...	Madison.	Lowe, Victor.....	Palmyra.
Anderson, Hon. M..	Cross Plains.	McDonald, D.....	Verona.
Baumbach, M.....	Wauwatosa.	Olds, B. B.....	Clinton.
Booth, E. L.....	Oregon.	Palmer, N. N.....	Brodhead.
Case, F. W.....	Madison.	Peffer, Geo. P.....	Pewaukee.
Clark, M. L.....	New Lisbon.	Pilgrim, D. T.....	West Granville.
Daniels, E. W.....	Auroraville.	Philips, A. J.....	West Salem.
Fratt, N. D.....	Racine.	Plumb, J. C... ...	Milton.
Gill, William	Dayton.	Plumb, T. D.....	Madison.
Graves, W.....	Brooklyn.	Smith, Alfred	Madison.
Greenman, C. H. ...	Wauwatosa.	Smith, J. M.....	Green Bay.
Hacker, T. J.....	Madison.	Stickney, J. S.....	Wauwatosa.
Hanchett, Mark ...	Footville.	Stone, I. N.....	Fort Atkinson.
Holt. M. A.....	Madison.	Tuttle, A. G.....	Baraboo.
Hoxie, B. F.....	Cookville.	Welch, Mrs. D. E..	Baraboo.
Hughes, W. H.....	Madison.	West, J. R.....	Evansville.
Hunt, Samuel.....	Evansville.	Wood, J. W.....	Baraboo.
Kellogg, Geo. J.....	Janesville.		

HONORARY.

Life.

Dr. JOSEPH HOBBINS, Ex-President. F. G. S. Corresponding Member Royal Horticultural Society, England.

O. S. WILLEY, Ex-Recording Secretary, Benton Harbor, Michigan.

Annual.

H. D. EMERY, Editor Prairie Farmer, Chicago, Ill.

S. R. MCKINLEY, Hamilton, Wis.

C. G. PATTEN, Charles City, Iowa

A. R. WHITNEY, Franklin Grove, Ill.

MRS. MARY L. ARNOLD, Galesville; MRS. D. C. AYRES, Green Bay; MISS ELLA A. GILES, Madison; MRS. H. M. LEWIS, Madison; MRS. D. HUNTLEY, Appleton; MRS. C. D. ROBINSON, Green Bay; MRS. I. H. WILLIAMS, Madison.

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FRUIT LISTS.

APPLES.

Six Varieties, Hardness Only Test.—Tetofsky, Duchess of Oldenburg Hass, Wealthy, Fameuse, Plumb's Cider.

List for General Cultivation.—Tetofsky, Duchess of Oldenburg, Hass, Plumb's Cider, Fameuse, Walbridge, Red Astrachan, Utter, Westfield Seek-no-Further, Tallman Sweet, St. Lawrence, Willow Twig, Pewaukee, Wealthy.

GRAPES.

General List.—Delaware, Concord, Lindley, Wilder, Salem, Agawam Janesville, Worden, Eumelan.

For Trial.—Israella, Rogers' No. 3, Massasoit.

RASPBERRIES.

For General Cultivation.—Philadelphia, Doolittle, Miami, also Fastolif and Brinkle's Orange, *if protected in Winter.*

STRAWBERRIES.

For General Cultivation.—Wilson's Albany.

For Trial.—Charles Downing, Burr's New Pine, Boyden's No. 30, Arena, Green Prolific, Kentucky, Prouty's Seedling, Col. Cheney.

PEARS.

For Trial.—Flemish Beauty, Ananas d'Ete, Early Bergamot, Bartlett' Swan's Orange, Seckel, Winter Nellis, Clapp's Favorite.

PLUMS.

For Trial.—Lombard, Imperial, Egg, Magnum Bonum, Hinkley (or Miner), Yellow Egg, Eldridge, Deane's Purple, De Soto.

EVERGREENS.

For General Cultivation.—Norway Spruce, White Pine, Arbor Vitæ, Scotch Pine, Balsam.

For Ornamental Planting.—Austrian Pine, Norway Pine, Hemlock, Siberian Arbor Vitæ, Red Cedar, Dwarf Pine (*Pinus Montana*).

For Timber.—European Larch.

For Live Fence Posts.—Norway Spruce.

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CONSTITUTION AND BY-LAWS.

Adopted February, 1868.

CONSTITUTION.

ARTICLE I. — This Society shall be known as the Wisconsin State Horticultural Society.

ARTICLE II. — Its object shall be the advancement of the science of Pomology and the art of horticulture.

ARTICLE III. — Its members shall consist of *Annual* members, paying an annual fee of one dollar; of *Life* members, paying a fee of ten dollars at one time, and of *Honorary* members, who shall only be members of distinguished merit in horticultural or kindred sciences, or who shall confer any particular benefit upon the society, who may, by vote, be invited to participate in the proceedings of the society.

ARTICLE IV. — Its officers shall consist of a President, Vice-President, Recording Secretary, Corresponding Secretary, Treasurer, Superintendent and an Executive Board, consisting of the foregoing officers and *three* members to be elected annually; five of whom shall constitute a quorum at any of its meetings. In addition to the foregoing officers, the presidents of all local horticultural societies shall be deemed honorary members and *ex-officio* Vice-Presidents of this society. All officers shall be elected by *ballot*, and shall hold their office for *one* year thereafter, and until their successors are elected.

ARTICLE V. — The society shall hold annual meetings, commencing on the Monday next preceding the first *Tuesday* of February, for the election of officers, for discussions, and for the exhibition of *fruits;* also, one meeting during the fall, for the exhibition of fruits and for discussions, at such time and place as the Executive Board shall designate.

ARTICLE VI. — This Constitution may be amended at any regular meeting, by a two-thirds vote of the members present.

BY-LAWS.

I. The President shall preside at meetings, and with the advice of the Secretary, call all meetings of the society, and have a general superintendence of the affairs of the society; and shall deliver an annual address, upon some subject connected with horticulture.

II. The Vice-President shall act, in the absence or disability of the President, and perform the duties of the chief officer.

III. The secretaries of local societies shall, by correspondence and personal intercourse with the horticulturists of their respective districts, obtain accurate information of the condition and progress of horticulture, and report to this society.

IV. The Corresponding Secretary shall attend to all the correspondence of the society.

V. The Recording Secretary shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports.

VI. The Treasurer shall receive and keep an account of all moneys belonging to the society, and disburse the same on the written order of the President, countersigned by the Secretary, and shall make an annual report of receipts and disbursements.

VII. The Executive Board may, subject to the approval of the society, manage all its affairs, and fill vacancies in the board of officers; three of their number, as designated by the President, shall constitute a finance committee.

VIII. It shall be the duty of the finance committee to settle with the Treasurer, and to examine and report upon all bills or claims against the society, which may have been presented and referred to them.

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REPORTS OF LOCAL SOCIETIES.

BROWN COUNTY HORTICULTURAL SOCIETY.

The prospects of this society are very encouraging. Meetings for the past year have been held monthly, and have been largely attended and were of more than usual interest.

The officers elected for 1878 are, J. M. Smith, president; Werden Reynolds, secretary.

FOUNTAIN HORTICULTURAL SOCIETY.

This society was organized at New Lisbon, February 16, 1878, by the election of the following officers:

President, J. R. Winkler; Vice-president, John Parks; Secretary, M. L. Clark; Treasurer, John White; Executive committee, Rob't. Willin, Wm. Northcutt, C. J. Walker, John Heartson, J. M. Bradley, R. Moulton and Mrs. C. Spaulding. Meetings for discussion will be held at the houses of members, having orchards or engaged in growing small fruits.

FREEDOM HORTICULTURAL SOCIETY.

This society has at present 51 members and is on a good financial basis. The officers for the coming year are:

President, C. Hirschinger, Baraboo; Vice-president, J. M. Haines, North Freedom; Secretary, L. T. Albee, North Freedom; Treasurer, A. Bender, Baraboo.

GRAND CHUTE HORTICULTURAL SOCIETY.

The interest in horticultural subjects has been well sustained during the year. Quite frequent meetings have been held for reading of essays and discussions.

The officers are, G. G. Johnston, President; D. Huntley, Secretary; L. L. Randall, Treasurer.

JANESVILLE HORTICULTURAL SOCIETY.

At the twelfth annual meeting of this society, the following officers were chosen:

President, F. S. Lawrence; Vice-president, G. J. Kellogg; Secretary, E. B. Heimstreet; Treasurer, D. E. Fifield; Executive committee, S. G. Williams, A. Hoskins, A. D. Wickham, I. B. Whiting, G. H. Williston, E. L. Dimock.

The treasurer's report shows the society to be in a prosperous condition.

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LEMONWEIR VALLEY HORTICULTURAL SOCIETY.

This society has held during the year 21 meetings in different places, in connection with two June festivals and a fall exhibition. Its membership is over one hundred, and it is in good financial condition. The officers elected for the year 1878 are:

President, C. N. Holden, Mauston; Vice President, R. B. Sabin, Sparta; Secretary, C. M. Patter, Mauston; Treasurer, P. C. Colver, New Lisbon; Trustees, J. J. Kibbe, Tomah; Miss Garratt, Sparta; C. H. Grote, Mauston.

RICHLAND COUNTY HORTICULTURAL SOCIETY.

The present membership of this society is 40, with a balance in the treasury. Much has been done to encourage fruit culture, and the prospects are very encouraging for future usefulness. The officers elected for the coming year are:

President, Hon. J. B. McGrew, Richland Center; Recording Secretary, A. L. Hatch, Ithaca; Corresponding Secretary, J. Hamilton, Richland Center; Treasurer, John Winn, Richland Center.

SAUK COUNTY HORTICULTURAL SOCIETY.

At the annual meeting of this society held January 26th, 1878, the following officers were elected:

President, Wm. Toole; Vice-President, J. W. Wood; Recording Secretary, Mrs. M. M. Davis; Corresponding Secretary, J. N. Savage; Treasurer, Wm. C. Warner; Executive Committee, H. H. Howlett, R. H. Strong, Mrs P. Chapman, Mrs. H. R. Ryan, Miss Mary Howlett.

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ADDRESSES AND PAPERS,

READ BEFORE THE

WISCONSIN

STATE HORTICULTURAL SOCIETY

AT THE

Annual Meeting held at Madison, February 4, 1878.

PRESIDENT'S ADDRESS.

J. M. SMITH, GREEN BAY.

Members and friends of the State Horticultural Society: — Since our last annual meeting, another year with its cares and labors, its joys and sorrows, has passed away. We meet again to commence the pleasant task of recounting to each other, as well as to the world, not only the success but also the horticultural trials and reverses that have crossed our paths during the past season. As far as I know, there have been no deaths among our members during the year, and but comparatively little sickness. I sometimes fear that when we are recounting disasters and discouragements that beset some of our number in attempts to grow fruit, that we fail to appreciate as we should the one great blessing, which we, in common with others enjoy, viz: a vigorous and healthy climate; one that produces strong and healthy men and women; strong not only physically but mentally. In this respect our state is probably excelled by none on this continent. This ought to go far to counterbalance some of the disadvantages that we labor under. When we recount the failures among the apple trees, the curculio among the plums, etc. a stranger might almost imagine himself in a land where winter reigns supreme for three-fourths of the year, and an angry Providence frowns upon us during the balance, and if he should happen to be looking for a fruit growing region with some idea of engaging in the business, he would flee from the state as Lot did from Sodom.

The fact is, we do not claim for our state the credit that is really her due in respect to fruit growing. You will all agree

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with me in the statement that my native state (New Jersey) is considered, one of the best if not the best fruit growing district of it size in the eastern states. Yet, in many respects, I have no hesitation in saying that in growing some varieties of fruit, Wisconsin can far surpass her. Some years since I made a short visit among my old friends there during the fruit growing season. I had scarcely arrived before I was told of an immense crop of strawberries that had just been picked from the grounds of an old friend, and I think, the largest grower of small fruits in the county. I visited him, and found that he was very much elated with what was regarded as an immense crop of strawberries. Upon inquiry, I found that they had picked ninety bushels per acre. It was the largest crop they had ever raised, and they have never equaled it since. There is no disputing the fact that it was a large crop for that section of the country. I laughed at them, and said to the wife, who had been an old schoolmate of mine: "Well Abby, I have repeatedly had at the rate of from two to three hundred bushels per acre, and if you will come and see me next season, and I do not show you a crop of more than three hundred bushels per acre, I will treat you to berries free of cost, pay your expenses both ways, and then own that we, western men, do not know as much as we thought we did." The following season we picked 3,571 quarts or 111 1-2 bushels from an exact quarter of an acre. I have some plants now that promise to do even better than that next season, but whether they will or not, remains to be seen.

In regard to currants, we can easily beat any portion of the state. When we come to grapes, the odds are still more in our favor. A few days since I read an article written by a fruit-grower in the central and largest fruit-growing district in the state, claiming that none of Rogers' hybrids were to be relied upon, except in very rare cases along the seashore, and that the Delaware was no better. In fact they had nothing better than the Concord upon which they could depend. I should like to have shown that gentleman our exhibition of grapes at Janesville last fall, or the still finer show of Delawares and Rogers' hybrids at Oshkosh, grown in the Fox river valley. The oldest grape-grower in Brown county has more than once told me that his grapes were the most certain crop upon his farm. Last fall he sold his entire crop to one man, at ten cents per pound. He picked over thirty pounds of choice Delawares from a single vine. The business is yet in its infancy, but enough has been done to fully demonstrate the fact that we have splendid grape-growing districts in this state. How extensive they are, remains yet to be seen.

The raspberry, the gooseberry and the cranberry are as much at home with us as in any of the states, east or west. As regards the last named fruit, Wisconsin probably stands at the head of the list, with a fair prospect of distancing all competitors at no

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distant day. We have but few cherries that can really be relied on. Large crops of apples have been grown in this state, and I shall not be surprised to see another large crop next season, and yet to call this a good apple-growing country would be a stretch of the imagination I will not venture upon. The fact is, that while we have some varieties that do well and seem to be perfectly reliable in certain districts, it is doubtful whether we have a single good variety that it is safe to recommend for all parts of the state. That such fruit will come in time, I have not the least doubt, but, in the meantime, we must patiently labor and experiment, and then as patiently await the results. Success will reward those who are the most intelligent and persevering in their efforts.

As to growing pears, I will, for the present, only boast of the little pear orchard belonging to one of my neighbors near Green Bay, and leave friend Kellogg to tell the balance of the story of pear growing in Wisconsin. If these views are correct, it will readily be seen that we have not yet brought fruit growing to perfection. Indeed we are far from it. But a patient, intelligent and persevering industry, will in time accomplish wonders. To that end we must bring our best thoughts, our best efforts to bear, until our state shall be as favorably known for her apples, as she now is for some of the smaller fruits.

In preparing for this convention an attempt was made to direct more attention to the subject of adorning and beautifying the farmer's home; and more than the usual number of papers will have a bearing in that direction.

You have all doubtless noticed that the grounds around many of our farmers residences are utterly destitute of trees, shrubbery, fruits, flowers, in fact, of everything that adds to, or makes a pleasant home. A house alone does not constitute a home. Build an expensive one if you choose, set it on a commanding height, from which you can view the lakes and rivers, the hills and valleys of the surrounding country, but if the grounds about it are destitute of lawns and trees, if neither, shrubbery, fruits or flowers are among its outward adornings, it may answer well for an observatory, but I would not accept it as a gift if it must remain in that condition. Whenever you see a farm house of this description, you will be very likely to find that the farm is for sale. But when you find a farm house, small and cheap though it may be, that is half hidden by trees and shrubbery, with a pretty lawn in its front, and plenty of fruit and flowers near by, you may generally conclude that it is not for sale, or if so, that the purchaser must pay handsomely for it with those improvements. There is nothing that will sooner arrest this almost insane mania for changing homes every few years, than to get our farmers to adorn them with fruits, flowers and trees. When this is once done, or even fairly commenced, many a tie is added to the homestead which

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makes it dearer to the hearts of the farmer and all his family. This was recently forcibly illustrated to me in the sad case of an acquaintance of mine, who, being compelled by reverses of fortune to give up a home made beautiful by taste and care in prosperous days, remarked to me with quivering voice, "It is hard, yet I do not mind it so much on my own account, but my wife has sown the grass on this lawn, set these shrubs and trees, planted and cultivated these flowers for years, with her own hand, and it will be hard, hard for her and the children to leave them." It is gratifying to know that young as our state is, in beautiful homes and surroundings it will compare favorably with many older states; yet much remains to be done, and efforts in this direction will not be labor in vain.

Learning that Prof. Thomas Taylor, of the Agricultural Department at Washington, had been for a number of years investigating the subject of fire blight, an effort was made to secure his attendance at this meeting, in the hope that we might profit by his observations, but our efforts were unsuccessful, and we are still left to our own investigations and resources. It is not surprising that there should be a great variety of opinions among our members upon a subject where all confess themselves to be more or less in doubt as to the cause, and still more so as regards a remedy. Still, it is pleasant to note that, while there are radical differences of opinion on this and other subjects that come before us almost every year, the members of our society discuss them with candor and dignity, and I have never known them to manifest any of that bitter and sarcastic temper, or the dogmatic and overbearing spirit sometimes seen in other societies. It is to be hoped that, however radical may be the difference of opinion, the same polite and gentlemanly bearing will continue between us. As long as it does continue, the duties of your presiding officer will be regarded, not as a burden to be endured, but as a pleasant task, anticipated with pleasure, and looked back upon with pleasant memories.

To the ladies who, for some years past, have annually brightened our meetings by their presence, and added to their interest and value by their papers, the society owes much. It is no exaggeration to say that some of their papers are among the most valuable ones in our volumes of transactions.

The State Agricultural Society, last winter, invited us to hold a joint convention with them. The invitation was accepted, and we think the result was satisfactory to all. This year the invitation has been repeated and accepted. We hope that the joint convention will be pleasant and agreeable to the members and friends of both societies. Gentlemen, our work is a noble one, and worthy of our best and most untiring efforts. Perhaps there are other branches connected with the cultivation of the soil that add more to the national wealth than horticulture; but we may safely say that no

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other does as much to make our farmers' home pleasant and attractive. If we could but induce all of our farmers to set even a few trees for shade and ornament, a few more for fruit, a few vines for small fruits, a few flowers for pleasure, and then carefully watch and guard them, what a splendid work it would be. It is true, that would be but the beginning; still the hardest part would then be accomplished, and the work of adding to, and making them more pleasant and beautiful would go on until our Wisconsin homes would become so cheerful, and so happy, that her sons and her daughters whenever and wherever they might roam, whether in our own or in foreign lands, would ever remember with a thrill of joy and delight that one beautiful spot was theirs; and though they might wander far, and linger long, still they would surely return at last to settle down amid the vines that cling around their own homes, to rest beneath the shade of the trees they had themselves planted; they would enjoy the fruits and the flowers they had reared with tender care; they would add to, and continue to beautify and adorn, until our state might vie in beauty with those of earth's fairest climes, and in happiness, be all that is allowed to erring mortals here below.

SECRETARY'S REPORT.

The passing year has again brought around the time of our annual conference, and we have assembled once more to examine its record, consider its lessons and profit by each others' experience. Each recurring season seems to bring additional evidence of the capabilities of our climate for extremes, and consequently more clearly demonstrates the difficulties with which we have to contend in the cultivation of fruit. There have been but few seasons in the past history of fruit culture in this state, in which some new combination of circumstances has not been developed, having a direct influence on its success or failure. A careful observation of these peculiarities and combination of elements of the seasons and the attendant results, must lead to the discovery of many facts of interest and value. Is it not for our own interest, as well as our duty, to make these observations, and put these facts on record for our guidance in the future, as well as for that of those who are to follow us? Much has already been done in this direction in a general way, but it seems to be desirable that something more definite and explicit should be attempted, and a more complete record of climatic influences and changes, at many different places should be kept, and their direct effect on the fruitfulness and vitality of plants and trees should be noted. Almost every season we see marked exceptions to the general experience

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in fruit culture, sometimes affecting a single species or even variety, at others, the whole class of fruits, doubtless owing to varied local conditions. What these conditions are, careful study and observation will enable us to determine, and once known, will help us to so regulate variety, location and culture, as to secure the necessary conditions, or at least, so as to modify existing ones and give a more reasonable hope of success.

The results of the past season have not generally been as favorable as was expected, and have been marked by a great diversity in different parts of the state. With the exception of in a few favorable locations, the apple crop was a failure; currants, hitherto regarded as the only sure fruit crop we had, were entirely cut off. In some sections raspberries bore well; in many others the bushes were killed down or injured, so as to greatly lessen their yield. Taken throughout the state, the crop was not over one-half of the usual average. Blackberries were entirely wanting, even the wild blackberry bushes of the woods were killed to the ground. In many nurseries, young stock, and that too of the varieties regarded as hardy, suffered much injury; in others, even the tender varieties escaped unharmed. The same diversity was also experienced with ornamental vines and shrubbery. Reports from various sections state, that in yield and quality grapes never did better, while others complain that although the vines were protected in the usual manner, they were more or less injured. In some instances the vines were entirely killed; in others many of the buds and fruit spurs were destroyed or injured so as to materially diminish the yield of fruit.

The scarcity of the apple crop may, in part, be attributed to exhaustion caused by overbearing the previous year; but many trees, in favorable locations, which have heretofore borne annually, and where the fruit buds seem to have been well developed in the fall, were entirely barren. Mr. E. G. Mygatt, of Kenosha county, writes that in his orchard fruit buds, apparently well developed, were winter-killed; something he has not seen before in 25 years' experience with fruit.

The main features of the previous season which may have contributed to these results, are an unusual amount of rainfall from May to October; averaging over four inches a month, causing a large and late, though apparently well matured growth of wood, but which may have left the fruit buds without sufficient vitality to endure the extremes of the following winter. The temperature of the fall was generally mild and higher than the average, up to the last of November, when severe cold weather set in. From the 26th of November, in 66 consecutive days, there were only four in which the maximum temperature was, at any time, above the freezing point. The maximum for December was 38°; the minimum, −22°, and the mean for the whole month, 11° 1′; for January the maximum was 41°, the minimum, −16°, and the mean

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12° 9'. This was followed by the other extreme in February, when the maximum was 52°, the minimum 15°, and the mean for 50°, the whole month was above 32°. In March the maximum was the minimum −1°, and the mean of the month only a little over 23°. Many attribute the injuries done to the warm weather of February, followed by the cold in March and the frosts in April. But a limited examination of a few trees in this city seem to indicate that the fruit buds were injured before the middle of February.

Much attention has lately been given throughout the country to grape rot and mildew. These diseases have been so prevalent in some sections as to threaten the total destruction of grape culture unless some remedy can be found. The amount of damage done in this state has been very light compared with other sections of the country, but has been rather more than usual. The few instances of grape rot I have seen, appear to have been wholly confined to cases where there were already an enfeebled condition of the vine. The worst instance of it was where the vine appeared to have made a strong and vigorous growth the fore part of the season, and the fruit had set well and was about half matured in size, but in pruning, the canes had been cut back within two or three buds of the fruit, and most of the leaves left had been struck with sun scald and had fallen off, and those remaining were feeble and sickly in appearance. Young vines, and also old ones in the same yard where the growth was strong and vigorous, were untouched. There seems to be as great a diversity of opinion as to the cause, as in relation to that of the fire blight. Among others presented are electricity, fungoid growth, the germ theory of all diseases, the loss of vitality of the vine; the work of insects, phylloxera, etc. Whatever may be the cause, it is undoubtedly true that anything which will promote a strong, vital growth will tend to ward off the attacks of this disease, and that neglect or bad culture will favor its development. As this appears to be one of the coming evils with which we shall have to contend, the attention of all who are engaged in grape culture should be directed to it, to discover at the outset, if possible, its cause and remedy. There are two things in connection with our system of summer pruning, as commonly practiced, which seem very objectionable and likely to lead to conditions especially fitted for the attacks of disease; one cutting back too close to the fruit, as mentioned above; the other, allowing the vines to make a large growth of leaf and wood, and then, when the whole plant is full of activity, its cells crowded with sap, cutting off what we deem superfluous growth, sometimes two, three or four feet or more; growth is checked and the superabundant sap lies dormant in the cells, injuring the vitality of leaf, root and branch.

Notwithstanding the unfavorable year, the exhibition of fruit at our state fair was very good, and a great surprise to all, both as

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to quantity and quality. Under the circumstances, it was a great success, and was owing entirely to extra pains in collecting on the part of a few who were anxious to have the horticultural products of the state worthily represented. The thanks of the society are especially due to our superintendent, for his great diligence and untiring efforts to promote the success of the exhibition and the comfort of the members of the society in attendance. The whole number of entries made was 548; of these, 214 were by professional cultivators of fruit; 142, by nonprofessional cultivators; six of nursery stock; 50, by professional cultivators of flowers; 135, by nonprofessional cultivators. The whole amount of premiums awarded was $605; of this amount, $193 was for fruit, to professional cultivators; $166, to nonprofessional cultivators; $89, flowers, professional; $147, flowers, nonprofessional; $10 to the Milton Horticultural Society for best collection of all kinds.

The law recommended by your society at its last annual meeting, in relation to the collection of statistics on the number of acres in orchards, timber and cranberries in our state, was passed by the legislature and partial returns were made in accordance therewith. The footings from 49 counties of the number of acres in orchards give a total of 139,891⅞ acres; but this is doubtless far from correct. A mistake was evidently made in the returns for Washington county, which is reported as having 50,095 acres. Dodge and Racine counties have each reported over 16,000 acrse; Green nearly 6,000, and Dane, Walworth and Waukesha over 4,000 each. The returns in relation to timber lands are much more incomplete, as there are no reports from 14 counties, mostly in the northern portion of the state. The footings of 46 counties gives 4,090,226½ acres. The acreage of cultivated cranberries in the 27 counties reported is 17,665.

In this connection I would repeat the suggestion of last year, of the advisability of adopting some plan by which we can secure more complete and reliable statistics pertaining to the horticultural products of the state. Much benefit would be derived from full, yearly reports of this kind. Beside calling attention at home and abroad to our resources, giving the amount and pecuniary value of what is raised, would serve to develop still further our capabilities, by encouraging others to engage in fruit culture as a business, and by leading to a more careful observation of all the conditions and principles on which success depends. Cannot our plan of fruit districts for observation be extended so as to include this work?

Our committee of observation find much difficulty, at present, in getting information from different parts of their districts, on which to base their reports to the society. It is impossible for most of them to give the time, or to be to the expense of an extended tour of observation, and consequently their reports must be general in character, meager in detail, and limited to a small

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portion of their districts. To obviate this, I would recommend that printed blanks, containing instructions on all points on which information is desired, be furnished them to send out to different parts of their districts.

Dr. J. A. Warder, of Cincinnati, Ohio, has requested me to call attention to the subject of Forestry, and to secure the coöperation of the society with the American Forestry Association in obtaining legislation in congress on this subject. It is a subject of great importance, and is justly receiving much attention throughout the country. Resolutions requesting our representatives in congress to favor the granting of the aid sought, should be passed, but it will, perhaps, be best to have whatever action is taken, be done in joint convention. In this comparatively new country, we do not perhaps see the necessity for immediate action in the cultivation and preservation of our forests; but those who have witnessed the wholesale destruction that is going on, especially in the northern portion of the state, are convinced that the time is not far distant when we shall feel its practical importance. The axe is rapidly destroying the work of centuries; but this is not all; fires set by railroad engines, by careless hunters, by Indians, and settlers, for the protection and improvement of their clearings greatly enhance the evil. Thousands of acres of timber are annually consumed in this way. Nature herself would soon remedy the evil by resetting and recovering the devastated lands with timber, but fires sweep over them every two or three years and are gradually but surely reducing them to barren, sandy wastes. Cannot this work of destruction be stayed by legislative action? The field of horticulture is a wide one, and includes many questions intimately connected with the wants and necessities of the present, and also with the welfare and prosperity of the future. In considering the questions of the present hour, let us not overlook those of wider bearings and of greater importance, inasmuch as their influence will extend to all time.

HORTICULTURAL EDUCATION.

A. L. HATCH, ITHACA.

Horticulture has a wider scope of meaning than its literal definition, "the art of gardening." It includes the art of fruit and flower culture, with that of tree growing, especially with reference to their ornamental use. Education, in its fullest application, includes not only the acquiring of information, but a training of the

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intellect with a view to develop its capacities and to invest its possessor with skill, thus combining in one individual, knowledge, mental powers, and ability to perform. From these considerations it is plain what we mean by "Horticultural Education."

HOW IS IT OBTAINED? Among the people generally there is no such thing as Horticultural Education. It exists in a fragmentary, not comprehensive way. Indeed there is among the most of our people a dense ignorance of some of the most practical and elementary principles of fruit culture and flower growing. Horticulture is not taught in our schools, and the natural sciences upon which it is based as an art are almost wholly ignored. Text-books or manuals upon almost all branches of horticulture may be found in the book stores. Periodical literature, devoted wholly or partly to horticultural topics, is cheap and abundant. Horticultural societies, with their exhibitions, fairs, meetings, discussions and published reports, add to the means and chances for learning fruit and flower culture. Besides this, the doors of that universal school called the school of experience are always open, and if tuition is often high, truth only is taught. However ample these means for learning horticulture may appear to the professional fruit and flower grower, it is a fact that they do not reach and educate the masses, the people themselves. Nurserymen, florists and seedsmen may continue to publish and scatter broadcast their catalogues and circulars, describing their varieties, and setting forth the beauties of horticulture, but such information will always be regarded as coming from interested parties, and will not therefore have full acceptance.

NEGATIVE KNOWLEDGE. — The love of fruits and flowers is almost universal. There are very few home-owners who have not made some effort to grow them. Failures often occur, and then the conclusion is at once formed that ours is a forbidding climate; that we cannot grow fruit here profitably. Too many are averse to mental effort to inquire into the philosophy of things; it is easier to conclude from one observation and experiment. Failure teaches to many, nothing but negative knowledge.

COMMON SCHOOLS. — The generality of the people are educated at the common schools. All the schooling received by the great body of our people is through that channel. It is probable, therefore, that any educational influence that can reach the main part of the people must come to them through these schools. Two considerations present themselves prominently regarding school studies. The first is system. All subjects taught and all text-books used are systematized and systematic. Everything taught is first reduced to a plan, so as to be imparted scientifically. Unfortunately horticulture and much of natural science has not been systematized. It has not been published in common text-

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book style, all bent down to scientific exactness. Will it ever be, or will school education ever change, and give us less of science and more of nature? The second consideration is that scientific and obstruse studies are persistently taught with the claim for them that they furnish the best discipline for the mind. For the purpose of adding what are termed "accomplishments" a great deal is often taught that is not practical, seldom being used in ordinary life. We believe it far better to learn less than to learn so much of no use; and that the learning of natural and practical sciences furnishes all the material necessary for mental discipline and intellectual "accomplishments."

BOTANY.—Vegetable philosophy is the natural science upon which horticulture is based as an art. In the form it has been presented to the public as a study, especially as published for use in schools, botany is terribly burdened with technicalities. However appropriate and exact they may be to scholarly and scientific minds, it is plain they present a very serious barrier to the pupil or learner. "Dentate," for example, may be a little more euphonious than toothed, "hirsute" a little nicer than hairy, but they are not any more exact or explicit. If botany could only be taught in simple, plain, common English, it would assist in making it more popular. Much of it deals with outward forms and characteristics. If we could have less of that and more of the philosophy and methods of growth, the elementary principles of varieties, it would be more useful.

The design and spirit of the Wisconsin Horticultural Society is primarily educational. It aims to gather the best progressive thoughts and studies upon horticulture. Its members are enthusiastic lovers of the good and beautiful in nature. They believe in Wisconsin homes and home making, and that one of the best adjuncts of life's employments is fruit and flower culture. It is no presumption on our part to assume that they desire a better horticultural education to prevail among the people; that they shall at least know the primary operations of transplanting, pruning and culture of fruits. In what way horticultural education may become general is a problem we have not endeavored to solve, but only to present considerations pertinent to it. Let larger brains and longer heads than ours study it out and present the public with feasible ways and means.

A higher education is, meantime, demanded of leading minds. Many things pertaining to horticulture are still imperfectly understood. As suggestive of one direction in which investigation promises valuable knowledge, we would name that of varieties. Each sort has its characteristics of leaf, and branch, and bud; of bark, color, form and habit. Do not each of these suggest features of vitality, fruitfulness, hardiness, etc.? Such knowledge has not

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been systemized. Can it ever be? Is it practical? For professional horticulturists the field of study is ample. To the amateur it is inviting. To be valuable as a study it must be practical.

Believing, as we do, that the restless spirit of the times and the bad state of public temper is produced by too much leaning to speculative and professional employment, we can conclude that the wholesome influence of horticulture among the people is very desirable. It is especially desirable that homes be made more attractive, and that the development of good from nature be encouraged. As a people we cannot well forego the influence of horticulture as an element in home-making, or as furnishing cheerful, profitable employment, making dissipation and idleness less probable.

SMALL FRUITS FOR THE FARMER.

C. H. GREENMAN, WAUWATOSA.

One who regularly enjoys the luxury of all varieties of the small fruits in their season cannot readily account for the fact that not one farmer in a hundred, in this state, has more than an occasional dish of berries or other small fruits on his table. With many farmers, this is in consequence of the opinion, which generally prevails, that professional skill is required to raise small fruits; but all are easily grown when the requisite conditions are complied with. No farmer would think of raising a good crop of corn or potatoes without first thoroughly preparing the soil, securing the best seed, and good after culture. He does not expect that at harvest time his cribs and bins will be filled without much care and labor on his part through the whole season. The same care and attention in the preparation of the soil, selection of plants and vines, and cultivation, will supply the farmer's table with an abundance of strawberries, raspberries, currants, grape, etc., and with these varieties, he will have a succession of fresh fruit, from the middle of June up to the holidays. No class of people have so great facilities for securing these luxuries as the farmers, yet many of them depend upon a few quarts of wild strawberries from the meadow, or raspberries from old fence rows, for their supply during the year. Will not a few simple directions on the methods of cultivation of these fruits induce them to plant freely for home use?

Strawberries succeed best when planted in good soil. The bed should be thoroughly prepared. In setting make the rows three

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feet apart, and set the plants one foot apart in the row. A bed from four to six rods long by two rods wide would furnish a good supply for any ordinary family; keep the bed clear of weeds and grass; let all the runners take root, and late in the fall cover the bed with marsh hay or straw; one inch deep will be sufficient to protect the plants during the winter; remove a portion of the covering late in the spring, spreading it between the rows. Set a new bed each year, and plow up the old one after the second crop has been picked, for no bed of strawberries will pay after the second season. Plant the Wilson, and success will be almost sure to follow. There are many other desirable varieties, but the Wilson stands at the head of the list for general cultivation.

Before the strawberries are gone, the raspberries commence to ripen. A few square rods of land set to these will ensure a good supply for family use. Tips of the black cap variety should be planted in rows six feet apart and three feet apart in the row. Raspberries respond best to generous cultivation. The red varieties are propagated by suckers, and should be treated the same as the black caps, but may be set a little nearer in the row. A plantation of raspberries will do well for a number of years. Mammoth Cluster and the Doolittle are the standards for the black cap variety, and the Philadelphia is the most successful of the red varieties. Every farmer should plant liberally of raspberries, as none of the small fruits are more desirable for home use, while fresh, and they are easily and cheaply kept for winter use by canning, as no sugar is necessary to preserve them.

Currants are easily grown and are quite generally cultivated, or rather allowed to take care of themselves as best they can. With very many farmers they are the only small fruit that finds place in the garden. Give plenty of room, cultivate thoroughly, manure well, and a bountiful yield of fruit will reward you. Improved Red Dutch, Victoria, and the Long Bunch Holland are the most desirable of the red varieties, and White Dutch and the Grape are the best of the white ones.

Where blackberries can be grown they are a very desirable fruit, and fill out the season with fresh fruit until grapes begin to ripen. With a little protection the Ancient Britain will yield a crop two years out of three.

Cherries can hardly be classed among small fruits, owing to the size of the trees, but in many sections of the state they can be raised successfully, and are valuable for use while fresh, or for canning or drying. The Kentish and Richmond are the most successful kinds with us, and usually bear heavily every other season.

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FIG. NO. 1.

Grape culture is so simple that every farmer should set a few square rods of land to vines. Select the sunniest spot in your garden, prepare the ground well by plowing deep, manure thoroughly, stake off the ground into rows eight feet apart, having the rows run north and south, take good, two year old vines and set them eight feet apart in the rows; in setting dig the holes eight inches deep and two feet across; set the vines at an angle of about 45°, so as to facilitate laying down to cover in the winter; spread the roots out evenly and cover them with about an inch of finely pulverized earth, press this firmly about the roots, and fill up the hole with loose dirt; mulch, to protect the vines from drought and to secure a vigorous growth the first season; allow only one cane to grow the first year; keep this tied to the stake; at the fall pruning cut this cane back to three buds, as shown in figure one; cover with coarse manure, hay or dry earth in the winter. The second season all three of the buds left will be likely to start; when three or four leaves have formed, select the strongest cane and pinch off the others; keep this tied to the stake; in the fall cut this cane back to three or four feet, according to its strength, as shown in figure two; all the buds on these canes will send out shoots bearing fruit the next season in the form shown in figure three. At the fall pruning cut these shoots back to three buds. The next year a trellis will be required to support the vines. This is conveniently made by setting posts between the vines and tacking poles or strips of boards to them, having the lower one about eighteen inches from the ground, and the others a foot apart; four of these strips will make the trellises sufficiently high. A fruit bearing shoot will grow the next season from each bud left on these spurs; in fall pruning, two of these shoots should be cut entirely away and the other cut back to two or three buds. The vineyard is now in full bearing, and by following up this system of pruning, cutting off all but one shoot on each spur, and cutting that back to two or three buds, the vines will be kept

FIG. NO. 2.

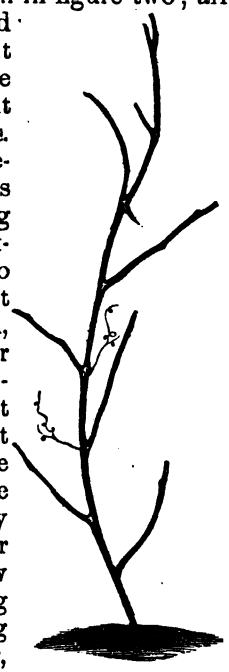

FIG. NO. 3.

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strong and vigorous, with young, bearing wood. After each pruning the vines should be laid down and covered as mentioned above. When it is necessary to bend them much, and to stake them down, it should be done before they are frozen, for then the vines are very brittle and apt to crack or break.

The grape for the farmer must be hardy, early, and prolific. The Concord has come to be the standard; the Worden ripens a few days earlier; the Delaware is unexcelled in quality of fruit; the Janesville ripens two weeks earlier than either of those mentioned, is extra hardy, but the fruit is of second quality; it is being extensively planted in the Northwest. Some of the Rogers Hybrids are very desirable in certain locations; the Wilder, Agawam and Lindlay are regarded as the best of these.

A sum, not to exceed fifty dollars will procure a liberal supply of plants of the varieties of fruit mentioned, and this small outlay of time and money will furnish a large amount of fresh fruit for daily consumption during the season and an abundance for preserving for winter use, saving many times that amount in other family necessaries, and adding much to the comfort of our homes.

Now, friends, will you do this, or will you still leave it to the professional grower to raise these fruits for the benefit and comfort of the cities and large towns, while you regale yourselves on pork and beans? Devote an acre of land to these fruits; plant and care for them properly, and blessings will follow. With this, and the addition of a few flowers, the farmer's home might become the Eden it was designed to be, and its comforts and attractions would tend to keep the boys on the farm and help to bring forward that "good time coming," when we shall become a happy and contented people.

RELATION OF SOIL TO TREE AND FRUIT GROWING.

J. C. PLUMB, MILTON.

Taking up this subject some years ago, as a possible solution of some of the problems of fruit growing in the northwest, I have found it a great and growing study, involving the fundamental principles of tree growth, the constitution of soils, and the special geology of our state in their relation to fruit tree growing. I am led in these investigations to have enlarged views of the importance of the subject, not alone in reference to horticulture, but in its relation to agriculture at large, in its present status, and in its future development, and I find it not easy to confine my remarks to our branch of rural industry, as I am expected to do in the limits of this paper.

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In former papers before this society I have dwelt largely upon the modifications which *elevation* and *aspect* might have upon our climate, and think I have never omitted *soil formation* as one of the conditions of success or failure in fruit growing; but I wish now to give more prominence to this phase of the subject. Compared with other natural conditions of tree growth, soil formation stands prior to all others, as it lies at the foundation of vegetable growth. Prof. Morrow, in a recent paper at the Agricultural Institute of the Illinois State University, says on this point: "While air, heat and moisture are as essential to plant life as the soil, yet the last is the most important to the farmer, for only through it can he affect the former. Through the soil only can he affect the supply of moisture or hope to increase the effect of heat. The soil may be said to do three things for the plant: it furnishes it a home by supporting its roots; it prepares food, and may be compared to a vast laboratory silently and constantly preparing food for the plant; and it is a storehouse, taking up and holding food for the future needs of the plant." Add to these suggestive facts the important truth that our native soil has been brought to its present highly organized condition by the slow processes of nature through many ages of time; therefore its native resources should be well understood and carefully husbanded.

Fortunately for the purposes of agriculture and fruit growing, the soil is susceptible of great changes. It may be modified by the simplest forms of culture or application of manures, and may even be radically changed by drainage or by the addition of elements wanting to it, so as to make it susceptible of an entirely different range of production. Such cannot be said of climatic conditions, which may by art of man be only slightly modified, not essentially changed. And so of elevation and aspect; strong points in tree growing, modifying the extremes of climate and giving character to the woody structure. These should never be lost sight of by the fruit tree planter.

But we turn to *soil formation* as the starting point in tree growing, and as a first requisite, we should secure the best conditions of soil, either as nature hands it over to us or by our art reformed to meet our necessities. We have this fact impressed upon us by the variety and orderly distribution of our native wood growth. In them we find the lines of demarkation by "natural selection" or "survival of the fittest," as plain as the geology is varied and orderly, so that the native vegetation is an unerring index of natural conditions of soil, far more than climate. On this subject our State Geologist, in his last report, says: "The most reliable natural indications of the agricultural capabilities of a district are to be found in its native vegetation. The natural flora may be regarded as the result of nature's experiments in crop raising through the thousands of years that have elapsed since the region became covered with vegetation." He then proceeds to arrange the upland flora in nine groups, according to natural habits. For

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our purpose I have not followed the elaborate subdivisions of our worthy geologist, as not necessary to our subject, but would here commend that portion of his report as a worthy contribution to an exceedingly interesting field of natural science, and presented in a manner new to scientific reports, yet as one of the most practical ways of studying native soils by any superficial method, and open to the most hasty traveler in a new country.

In example of this "natural selection" or adaptation we will for our purpose class our native upland wood growth in five general divisions, viz.: 1st. The Burr Oak group. 2d. The White Oak group. 3d. The Maple group. 4th. The Black Oak and Scrub Pine group. 5th. The Granite or Composite group.

The first division embraces the Burr Oak (*Quercus macrocarpa*), Black Oak (*Q. tinctoria*), the Poplars (*tremuloides* and *grandidentata*), the Pignut (*Carya glabra*), Red Cherry (*prunus Pennsylvanica*), Wild Plum (*prunus Americana*), Wild Crab (*pyrus coronaria*), Wild Grape (*Vitis cordifolia*), Red Raspberry (*rubus strigosus*), with the ever-prevailing Hazelnut (*corylus Americana*) and Sumac (*Rhus*). These are the prevailing natives of our prairie borders and light sandy loams with firm subsoil, which we denominate Burr Oak and Hazelbrush prairie lands. These are rich in all mineral elements, and in humus; the latter prevailing too much, oftentimes, for the best results in fruiting trees. But, as these lands are generally well drained by nature, they are quite successful as fruit lands. The exceptions being the richest prairie and the poorest sands. Of this general character, is about one-half of that portion of the state known as southern Wisconsin, with occasional areas stretching up the Mississippi valley to the northwest. This group is embraced mainly in the Trenton, Lower Magnesian and Galena limestone formations. Soil, calcareous clay, rich in humus, and with more or less sand as a base. It is very largely boulder drift, and independent of the underlying rock.

Division two, the *White Oak group*, embraces the White Oak (*quercus alba*), as the typical tree, with the Black Oak and Red Oak (*quercus rubra*), frequent, Hickory (*carya alba*), with the poplars and the native fruits named before, adding the wild Black Cap Raspberry and the Blackberry in the groves and ravines, where there is a large supply of humus. The underbrush is also largely made up of Hazelnut, Cornus, and other shrubbery plants. In the more humus soils the Basswood (*Linden Americanu*), White Elm (*Ulmus Americana*), Red Elm (*Ulmus fulva*), White Ash (*Fraxinus Americana*), Black Cherry (*prunus serotina*), Black Walnut (*Juglans nigra*), Butternut (*Juglans cinerea*), with the native Thorns (*Cratagus*) and Ironwood (*Ostrya Virginica*), Hazelnut and several varieties of the *Cornus* family. The Maples here appear occasionally. The soil of this group is a firm, rich, light-colored clay, with firm subsoil, strongly impregnated with lime, and is

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found in all the limestone areas. The presence of White Oak in any situation is a sure indication of clay subsoil.

The upper strata of lime rock seem to produce a larger range of timber growth than the lower. Through the length of the state, the presence of all the native fruits in this group indicate its capacity, and may be considered an unerring guide to the adaptation of their *congeners* among our cultivated fruits. Our most successful orchards are with this group of native trees, for the soil is more uniform in character, not so "quick" and fast in producing luxuriant growth; but its strong mineral constituents produce the best native timber; hence we find long life and fruitfulness as nowhere else. The district embraces about one-third of the southern portion of the state, with an extension northwest and northeast through most of the limestone regions below the Niagara.

The third natural division may be called the *Maple Group*, of which the Sugar or Hard Maples (*acer saccharinum*), is the typical tree, with the Red Maple (*acer rubrum*); the White Elm (*ulmus fulva*), White Ash and Black Ash (*Fraxinus sambucifolia*), White Oak, and the Beach (*Fagus*), which latter requires also the special condition of atmospheric moisture to thrive. The native edible fruits of this district are the Highland Cranberry (*virburnam*), and the Thorns (*cratægus*).

The soil in this class may be a marly clay, or a calcareous clay, but will be largely impregnated with lime. The soil possesses all the elements of tree growth and fruitage, but must be thoroughly drained to secure durable wood for the climate.

The fourth, we have called the *Black Oak and Scrub Pine group*, these being the typical trees. It is characteristic of the lower or Potsdam sandstone formations. Here the black oak (*Q. nigra*) and the gray pine (*pinus banksiana*) are able to eke out a scanty subsistance, seldom attaining a height exceeding 30 feet, and that they are here, may be not so much from "natural selection" as from their power of endurance, as the gray pine is said to exist farther north than any other tree on this continent. With the admixture of clay in this soil, the white oak comes in. The admixture of calcareous drift from the east, bringing the oaks, elms, and other trees of that region, or the pines of larger growth, the white pines (*P. strobus*) and red pine, or Norway pine (*P. resinosa*).

The native fruit trees are not found in this district but rarely, and in their places we find an abundance of small fruits, beginning with the blueberry and cranberry on the low lands, and the strawberry and red raspberry on the dry lands, that have a surface mold to support them. Here, these fruits are at home, and without the gardener's care yield bountiful crops of finest flavored fruit.

The fifth, or *composite district*, is characterized by the general absence of calcareous drift; the soil being mostly formed from the

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decay of the primitive rock, and of vegetable growth, has all the elements of tree growth in abundance.

Its timber resources are its chief attractions at present, and no doubt the Siberians and other hardy apples will find congenial homes where the native wood now thrives so abundantly. But we have too little data to speak conclusively of its special adaptation to any species.

Were our soils the direct product of the underlying rock, we would find the lines of demarkation in the native wood growth much more sharply drawn than at present, for the drift deposits have given us an endless variation of soil, as we find erratic or stray rocks everywhere. We have limestone soils in sandstone districts, and *visa versa*.

The most variable soils I have found in the valley of the Wolf river, in the lower sandstone district, where on a single quarter section I have found four or more distinct varieties of soil with their corresponding native trees.

1st. Siliceous sand from the Potsdam sandstone, with its black oak and gray pine.

2d. Marly clay, or upper clay of sedimentary origin, with its mixed oak, maple and pine.

3d. Boulder clay, calcareous, from the decomposition of boulder drift, with its white oak and sometimes burr oak.

4th. Arenaceous clay from the granite region, with its mixed timber of great variety.

Special causes exist for this diversity of soil in the narrow limits of this valley, with the limestone of the east and granite of the west, which are marked features in the geology of our state.

In the southern and eastern portions of the state the boulder drift is more general and of greater depth, and breaks up the outline of soils more than in any other section. Here we often have a subsoil of clean washed gravel, which affords most perfect drainage and good supply of mineral elements of tree growth, but is too porous to hold manure, and admits frost to a great depth in winter; and though trees here make hardy, well-ripened wood that seldom winter-kills, nothing but a heavy winter mulch will save their roots in dry seasons. Where the drift soil is more of the nature of concrete, with sufficient calcareous clay to bind it, it is yet of good natural drainage, and stands at the head of the list of fruit soils for the west.

I have given this general outline of these natural divisions of upland tree growth, not as a perfect system, but as introductory to a more thorough investigation and complete arrangement. I propose to draw some practical lessons on fruit growing from this evident tendency of the tree to choose its home and surroundings. This tendency is evidently based on necessity; *on the individuality* of the species or variety, and therefore as inherent and permanent as the same quality in animal life. The tree we plant

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must find not only a root hold, but congenial food, in its home or it cannot thrive, and if these needed elements are not, native to the soil they must be supplied by art. How may we know of the proper relation of soil to tree growth? First, by *analysis*, and second by *observation*. The first most positive and the last, most practical. If any have concluded that fruit growing is not a success in our state, they must admit that there are cases of fair success, even under the blind practice of the past. We now propose to see light ahead at every step we take, and to call to our aid practical science, as well as practical experience. We must understand the harmonies of vegetable life and of tree growth. We find in district and group number one that the apple, pear, plum, cherry, and all the small fruits, thrive finely, but grow too fast and too late for endurance on the richest prairies or valleys. We should then choose the leaner soils, grow slower, and cultivate less.

In the second district or *White Oak group*, the soil is by nature more prolific of sound timber and is, therefore, other things being equal, more likely to grow a perfect fruit tree, and with good drainage, and careful management, must become the main fruit region of the state.

The third district or *Maple group* has all the elements of tree growth named for the second, but with its agriculture in general, can be truly successful only when ridging or underdraining are the rule and not the exception. Strong, rich soils, retentive of water as these are, must be radically changed by drainage, subsoiling and elevating or ærating, so as to secure an earlier growth and ripening of the wood. This secured, the maple group will become a successful competitor in our fruit exhibits and in our markets. This is especially true of the strong marly clays of central Wisconsin, where the highest colored, richest flavored apples, pears and grapes of our state are grown.

The fourth district, the *Black Oak* and *Scrub Pine* group, are the nearest to hopeless of any portions of the state, but with the frequent areas of clay and peat, which are abundant and easy of access all through that formation in our state, none need despair, even there. A moderate amount of clay mixed with the soil in which the tree is planted, and an annual top dressing of clay and muck around the tree will be a gradual and permanent change of the soil for the good of the trees.

In all of these districts we find hopeful signs of progress and permanency in fruit growing. There is a growing inquiry as to the best locations for, and care of the orchard. There is an earnest searching for hardy varieties, and a careful weeding out and rejection of such as do not prove both hardy and productive in a given locality. When the conditions of success are well demonstrated, the best locations, soils, elevations, aspect, varieties and mode of culture are made plain, then will there be a new life and

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permanency to fruit growing in our state. I believe the grandest problems of practical agriculture and horticulture are yet to be solved, and only by accurate and careful experiment from a scientific basis. I would have the labors of our state geologist, and of our analyst heartily seconded by all fruit growers as well as farmers, for every fact established in the geological structure of our state has a direct bearing upon some branch of its industrial interests, and on none more than agriculture, in its broadest sense.

AMERICAN FORESTRY.

DR. JOHN A. WARDER, CINCINNATI, OHIO.

To my Friends of the Wisconsin Horticultural Society: If it be not trespassing upon your good nature, or interfering with your favorite pursuit of pomology, an old friend may be permitted to lead you aside for a few minutes, to the discussion of a subject which many of your sister societies have considered cognate and pertinent to other branches of our favorite pursuit. Forestry, at least in its milder phases, as found among us in this country, may very appropriately be discussed by a horticultural society. So, at least, have we thought and acted in many of the western states. We cannot forget what we owe to you of Wisconsin; you were among the first to direct our attention to the consideration of our native sylva, and to give us some valuable information respecting the trees, in a pamphlet, prepared by Messrs, Knapp and the lamented Lapham. Nor should we withhold our admiration for your energy and perseverance in the pursuit of horticulture, especially in its department of pomology, and in the selection of a class of "iron clads," adapted to your rigorous climate.

The closely allied question of *protection* has, no doubt, received a due share of your attention, and (if not in Wisconsin at home) you cannot fail to have drawn valuable lessons in this branch of the subject from your intelligent neighbors in northern Illinois. As is well known, this valuable shelter can in no way be so well secured as by judicious tree-planting in groves and especially in shelter belts. Your early attempts at forestry have been quoted, and we trust you may have persevered in the good work, and that, from your own happy results, we may yet gather much valuable information, resulting from the many lines of investigation we all of us have yet to pursue in our forestry education. From these various experiments, and from the mass of collected data, we shall one day educe some system that may be found worthy the name of *American Forestry.* It must be confessed, that up to

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this time we are sadly ignorant of the subject, that we have not even the first principles, the *rudiments* of the art and practice. We are not even yet sufficiently familiar with the very tools with which we shall have to work — the trees themselves! So that what we *don't know* may be easily told, seeing that, indeed, we really *know* nothing at all!

In the first beginnings of the art, we must admit that our western friends, especially those beyond the great rivers, Mississippi and Missouri, have transcended all our feebler efforts with their wonted energy and pluck, born, perhaps, of the broad horizons of the vast prairies. They have planted more extensively than we, and report the setting out and establishing in healthy growth of many millions of trees annually. By the offering of premiums and by the stimulus of their *Arbor Days*, they have aroused the attention of the people, and thus have secured these wonderful results. It may be objected to by some of your more intelligent members, that these western tree-planters make too free a use of what we consider an inferior tree, and that though they may cover considerable tracts with groves they are of insufficient variety. Were the planting to continue indefinitely to be made of this meager selection, this criticism would have some force, but the selection of the Cottonwood, of the Elm, of the Water Maple, Box Elder, and a few others, is really praiseworthy, and for the following excellent reasons: These trees are all natives, to the manor born; they are well adapted to the soils upon which they are planted; they are easily obtained as seeds, seedlings and cuttings, and in one or other form, will grow with certainty; hence there are fewer disappointments and less outlay, with correspondingly less losses and discouragements. These natives are all hardy and able to withstand the climatic conditions to which they are exposed in their tender infancy, when set out on the bleak prairie lands. They grow and thrive, and soon produce a shelter for other and more valuable kinds that could not by themselves have endured the exposure to the hot blasts and burning suns of summer, nor the drying winds and cutting frosts of winter. After the shelter has been created by these, one may hope to succeed with many a species that has been condemned as tender, after a few trials, when standing alone and without even the shelter by which they were protected in their native haunts. There may be something in what is called acclimatization, though in most cases it will probably be found that it depends upon a modification of the surrounding conditions, rather than in any change in the constitution of the individual plant.

Not to take up the list of trees in detail, a word may be permitted here on behalf of the Cottonwood, which constitutes the staple of western artificial forests; true, indeed, it is, that where we have natural forests of more valuable species, this, and indeed the whole family of poplars, are considered inferior, but we must

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remember that trees vary with their conditions, and besides, that there are botanical varieties (*possibly species*) that depart from the normal characters. In the region of the great lakes, and in the Ohio valley, the Cottonwood is indeed of little value, but on the Mississippi there is found a tree, known as the Yellow Cottonwood, and largely planted there, which has admirable qualities. It splits well; when sawed, the planks do not split and warp; it lasts well as clap-boarding and when worked into shingles, and it holds nails better than that made from the tree with white wood.

So with the Box Elder, that is considered a very inferior tree in the valleys that flank the Alleghanies, where first found abundant, and where it is considered useless, except as a shade tree in the village streets; while on the western rivers it assumes considerable importance, and puts on characters that almost entitle it to be considered a new species. Its good qualities are beginning to be realized, and it is planted largely in the streets of Washington.

The White Willow and the Lombardy Poplar, both foreigners, have similar attractive qualities to the western planter; and the facility with which they may be multiplied, has been a great encouragement to the prairie farmer, who considers them very desirable, although we, who have better timber, may hold them in very low esteem. The former has indeed been a boon to northern Illinois, as a wind-break, though in similar soils and with heavy clay subsoils, the Lombardy appears to be short-lived, while on the eastern border of your state, on the high rolling prairies that are underlaid by gravel, that insure a good drainage, it may succeed better, and it appears to have done good service where the trees have been planted, even in single rows, as wind-breaks around the fields; but you can better speak from your own observations as to the probable longevity of this peculiar and historic tree, brought from classic Italy where it has been propagated since it was immortalized in the poetic fables of Ovid. Long considered a distinct species, it is now believed to be merely an erect form of the common *Populus nigra* of Europe. It is known only as the male plant, and all have been produced from cuttings of branch or root.

Not further to detain you, let us proceed to a glance at some of the great questions that must arise in the path of every man who considers this subject of tree planting: These will occur under the heads of *planting*, of *cultivation*, of *thinning*, of *trimming*, and of other necessary treatment, and a few words may be accorded to these severally. First, as to *kinds*, each must decide for himself what will be best adapted to his objects, to his situation and soil, latitude and altitude, exposure, et cetera. Next he must decide how to plant, and whether he shall use seeds, seedlings, or cuttings, and how closely these must be set. Wide planting is one of the greatest mistakes that has been committed, and this, unfor

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tunately has been encouraged by ill-advised legislation, both state and national; whereas, all experience, and the indications of nature favor close setting of the young trees; four feet each way is the distance most commonly recommended, or nearly 3,000 to the acre; some plant still more closely. The details of putting them into the ground need not now be considered, though in this too there is much to be learned as to the best methods. Another important matter in relation to planting, consists in the methods to be adopted; whether a wide area is to be covered with a solid block, or whether the trees shall be disposed in groves of limited extent, covering elevations, bluffs, hillsides and riverbanks, on waste lands wherever they may be located, or whether in the broad areas of a level and arable country, they shall be set in shelter belts, of a single row, or of a few rods in width, so as to protect the farms between them from the winds, and at the same time to produce the timber and fuel that may be needed by the proprietor.

Grouping, or the proper commingling of different species, is a problem of the greatest consequence, and may often involve the success or failure of the plantation, according to the judgment and knowledge by which it has been directed. Some trees naturally grow in large patches of a single species, and seem to thrive best when thus situated, others seem naturally to seek association, and to prefer a mixed forestry. These indications may be followed by the planter, who should be aware that some kinds are even obnoxious to others; he must avoid introducing such into his plantations. Desiduous trees, especially those with an abundance of broad foliage, seem to affect evergreens unfavorably. Some trees grow with greater rapidity than others, and even at maturity others differ in the height to which they attain; grouping of such should be avoided, if we desire each kind to reach its best estate, although, when used as nurses they may be admitted as temporary occupants, and in this way prove advantageous. Thus it is not at all uncommon in Europe to see oaks set at wide intervals among plantations of Scotch pines; the latter species grow faster and sooner reach maturity, when they are removed and utilized, leaving the oaks, with tall and clean stems to occupy the land for another century, during which they may reach their maximum of usefulness. In this respect the oaks of fifty years are superior in Bohemia to those at Windsor Park, England.

Culture.— In all arable lands it is found to be of great advantage to cultivate the young trees. This is best accomplished by using the plow or some kind of cultivator, and it should be continued for one, two or three years, according to the thriftiness of the species planted, but so soon as the land is well shaded, the trees will take care of themselves, the ground being mulched by the fallen leaves, remains open and loose, weeds and grass are smothered, though occasionally some sturdy specimen may need removal.

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Trimming.— Of this work the less the bet'er, and very little will be required if the trees have been set closely enough to force them to grow upward, and to have their side branches choked and killed by want of air. Still some pruning may be necessary; when there are two separate shoots striving for the mastery one should be removed. Some species too, are prone to throw out side branches which may need curbing. All such as need to be removed should be suppressed when quite small. The thriftiness of a stunted young tree may sometimes be assured by cutting it down to the ground, in winter or spring, when, if the roots be healthy, it will soon be replaced by a strong shoot, that will take its place beside its fellows if they do not cast too great a shade.

Thinning.— This process will require great judgment, and no precise direetions can be given for the work. The objects of thick planting must be borne in mind, occupying and shading the surface of the ground, and the production of tall, straight growth, but we must guard against an excess of the last. The young trees must not be allowed to become too spindling; they will require timely thinning. This is effected to a great extent by nature, the weaklings die out, others can be cut away, and when small may be left upon the ground. If further thinning be requisite, some of the larger trees may be cut and utilized, but the systematic removal of alternate trees and alternate rows which may have been theoretically recommended by some, can rarely ever be followed; as elsewhere, much must be left to the practical good sense of the young forester.

From this hasty review of the situation, two things may have been made apparent to you: *first*, that in the planting and rearing of a forest, there is much to be done, and much required to be known; *second*, that as yet, very little has been done, and that almost nothing is known upon the subject, by those of us most deeply interested, and most actively engaged in the work.

What next! It remains for us to continue our experiments, to watch and to report the results, whether they be successes or failures. To keep on trying, though, unfortunately many of these experiments will require a considerable outlay of money and long years, and series of years, for their completion, which will not always be successful. In the meantime, as the need for practical information is urgent, shall we not reap the field, white with the harvest? A vast fund of such information is only awaiting our commands, in the results of many of the problems we are called upon to solve. These results have already been attained by the foresters of other lands. They may be had for the asking, and for the taking. We have already asked the means to carry on the work by memorializing congress. Will you not strengthen our hands by adding your appeal to your delegates, to sustain a measure that may be made to yield so rich a return to our people. The plain statements of a report upon the

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forests of Europe as seen by a competent and practical American cannot fail to be of immense value to that large body of American agriculturists which must soon be actively engaged in planting, conserving and restoring our woodlands.

HOW BEST TO UTILIZE OUR FRUIT.

J. S. STICKNEY, WAUWATOSA.

Our memory reaches easily to the time when we were studying anxiously *how to get fruit to utilize;* and over a large part of our fair state this is still the great question. To people thus situated, the inquiry, how to utilize, seems easy to answer. They can think of abundant ways and means of utilizing. Still it is a fact that in this state of Wisconsin, many thousand bushels of apples; yes, many thousand dollars worth, have in years of plenty been carelessly wasted. In other fruits there is far less waste; indeed, of most kinds, there is yet but a limited supply; still the best methods of handling and saving are worthy of attention.

Our first fruit, the strawberry, can be most perfectly and securely saved by a liberal dressing of nice, sweet cream and granulated sugar, and immediately thereafter a vigorous and sprightly handling with spoons. If the supply is too large for private efforts, one's neighbors and friends will readily volunteer to lend a helping hand. Another and perhaps wiser method is to dilute with more or less of shortcake, as one's taste or the number of one's friends may render necessary. Any that may escape these methods, we have usually exchanged at our nearest market for cash. When such market is not accessible, canning is the next best thing, and really, canned strawberries are very nice, though some of the rich, sprightly aroma of the fresh fruit will disappear the moment you apply heat.

Raspberries will carry their full, rich flavor through all the processes of cooking, canning and drying, perhaps better than any other fruit, consequently there is little danger of an oversupply. Use all you can fresh from the garden; can all you can, and dry all that remain; you may thus place them on your table every day in the year, always inviting and appetizing.

Of blackberries, except in locations where they are gathered from the woods, our present inquiry is how to get, rather than how to utilize. The few gooseberries that are grown, make an excellent tart, used in a variety of ways; our favorite method for general use is, to cook the green fruit with half its weight of sugar, cook *thoroughly*, add spices to taste, seal while hot in cans or jars, and it will keep indefinitely.

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Currants are, or ought to be, abundant everywhere. Sour things, they truly are, but they come at a time when we *need* just such sour things for pleasure, comfort and health. From the time they are half grown until the very latest are gathered, they are palatable and refreshing; besides the quantities used fresh from the bushes, currant jelly is a standard and welcome article on all our tables; delicate and choice jellies are made from other fruits, but none seem to possess quite the bright, pleasant tart of this. This same sprightliness is equally characteristic of the dried fruit. We have seen currants dried just as they came from the garden, and *very poor* they were; but slightly cooked with one-fourth their weight of sugar and then dried, they are delicious, and will make a welcome addition to almost any food in which fruit can be used.

Grapes of the better keeping kinds can be had fresh and in excellent condition, for three to four months, by carefully packing and keeping in a cool, even temperature, and rather dry atmosphere. Of utilizing by making into wine, I have little to say. The price they bring for this purpose is very small: three to four cents per pound. If this is saved to the producer, possibly it is lost or worse than lost to the consumer. Cherries retain their flavor perfectly, either canned or dried. Our plums have thus far been mostly utilized by the curculio; but were our efforts as thorough and persistent as his, results would be very different. Any little remnants that he leaves are readily traded for cash, at four to six dollars per bushel.

Now we come to the apples, and here our real work begins; 500, 1,000, and even 2,000 bushels are not uncommon crops, from our best orchards. This is something worth looking after, and something requiring *energy* and *force* to properly care for. For the imperfect or wind-fall fruit, feeding to stock, or making into cider for vinegar, are the only uses. Those who have fed apples largely to stock, place their value at about 12 cents per bushel. Made into vinegar, they will yield something less than three gallons per bushel, worth at wholesale 15 to 18 cents per gallon. In this connection, we are to consider the necessary fixtures, the care and labor, the loss from leakage, and other mishaps, and the time (usually 18 months from the fruit to the consumer): all carefully considered, it is probably most remunerative when fed to stock.

Of the sound, well ripened fruit, there is a portion too small or otherwise unfit for market; perhaps some part of this could be profitably dried, the balance must go to the stock or to the cider mill. Cider from this is much better than cider from the early fruit; it makes a better vinegar, and, by careful treatment, may be kept for several months free from alcohol, and a very palatable and healthful drink. Of its use when sugar is added, and that sugar thoroughly fermented into alcohol, I can make no favorable mention. It is pleasant to the taste, but when I drink it, it makes

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my head ache; if I should so far forget as to drink a pint, it would make me drunk. Those who drink it freely habitually slide very easily into the use of something stronger. These things being true, wherein does its manufacture and sale differ from the manufacture and sale of whisky?

Now for the most important and valuable part of our crop, the marketable fruit. Here we need good fixtures to work with. If to go to a near market, we *could* use *bags*, but it would be safer for the apples to follow the shiftless hoosier style, and pile them, mingled with straw, directly into the wagon box. But there is a simple, cheap, convenient and better way than either, viz., a smooth, light, strong, bushel box. In the interests of our pickle works, we have distributed perhaps 5,000 of these boxes, and now I see them in every market wagon, in most grocery stores, and in almost every farmer's potato patch, orchard and cellar: they are fifteen inches wide, eighteen inches long, and nine and one-half inches deep, inside measure. Ends made of three-fourths inch (with hand holes in each), and bottom and sides of one half inch lumber. They hold a bushel not quite even full, so that they may be piled one on another without injury to contents. They fit almost every wagon, utilizing all the space, and can be piled on to any extent necessary. Fruit and vegetables are not jammed in them, as in baskets, and if stored in them, there is less exposure to air. For distant markets, barrels are best; these should be new and clean; not such old sugar, cracker and even salt barrels as are sometimes used. As soon as it is evident that your are to have a full fruit crop, get these barrels ready; then, at the proper time, gather carefully; sort so as to make quality *strictly* and *uniformly good*, pack securely, and instead of being subject to the ups and downs of a small local market, you are able to take advantage of a distant market, where fruit is less plenty and prices better.

In drying apples, good size and smooth, regular surface are important aids; and goodness of quality is quite as apparent in the dried fruit as in the green. We have all seen splendid samples of dried fruit made by the Alden process; but the necessary fixtures are too expensive for individual use, and the fruit crop in Wisconsin is too uncertain for people to invest in a large public drying house. There is a portable, and seemingly very efficient machine known as Ryder's Fruit Dryer made in three sizes: No. 1, costing $40, has a capacity of 2 to 3 bushels per day; No. 2, costing $60, has a capacity of 4 to 6 bushels per day; No. 3, costing $150, has a capacity of about 10 bushels per day.

These are made by the American Dryer Co., Chambersburg, Pa., and will doubtless meet the wants of those desiring to handle this amount of fruit. In a small way, for family use, very good results from solar heat may be secured by a box covered with glazed sash. It may be six inches deep and of any desired length and

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breadth, so placed as to be sheltered from high winds, and exposed to the full sunlight. The glass should be inclined sufficiently to carry off water; some musquito netting will guard against insects. All this is very simple and inexpensive, and will greatly aid the usual household drying.

As common as canned fruit now is, very many people have little confidence in their ability to save their fruit so that it shall really be worth the trouble. They have a sort of dread of the whole matter, and go about it, if at all, with a feeling of doubt and uncertainty which is anything but helpful. Glass cans are very nice, but somewhat expensive, and subject to much breakage. Tin cans cost less, are very readily filled and sealed, and if washed and dried as soon as empty, will last a long time. For the largest good from the least outlay, we much prefer one and two quart tin cans. Cook and season your fruit as for the table, place in cans while very hot, and seal at once. As the wax cools, examine carefully to see that all are secure, then store in a cool place and you may reasonably expect that the contents of each and every can will be perfect and good six or twelve months hence. With an abundant supply of these things at hand, the question, what shall we have for breakfast, dinner or tea, will lose much of its perplexity.

In thinking how to make the most of our apple crop, the question of profitable and unprofitable varieties comes up with startling force. In the light of dollars and cents how very unsatisfactory are the varieties found in many of our orchards. In deciding what to plant we must first seek for hardiness, then productiveness; *good size* and *smooth*, *shapely form*, I think, should come next. Of course we want quality, but in our market sorts, we can hardly afford to sacrifice size and form, even for quality. In nothing that we do is prompt, thorough energy more necessary than in the production and marketing of fruit. With this, all is pleasant and profitable; without it there is little profit and more of vexation than pleasure.

SOME THINGS I HAVE NOT DONE.

G. J. KELLOGG, JANESVILLE.

It will very readily occur to the mind of most of you, that I have never got rich raising pears. Although I have planted and continued to plant for twenty-four years, on the gravel knoll where I now live, trees innumerable, and varieties without number, I still have failed to get rich growing pears. When I

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look back at my early greenness in horticulture, and attempt to recount my failures, it is to me very amusing, although it has been very unprofitable. The first great failure was the selection of the site, a prairie gravel knoll. After securing the location, my efforts first and last should have been the cultivation of white beans. Of the first 300 apple trees planted, of over fifty varieties, six kinds still remain, two of them worthless, one unproductive, and three fast making me rich. These three are Red Astrachan, Duchess of Oldenburg and Golden Russet. It would be useless to name the other forty-seven failures, for I think every fool knows better than to plant Rhode Island Greenings, Baldwins, Spitzenbergs, etc., where peaches cannot be grown. The Yellow Bellflower is a remarkable failure. I have trees twenty-five years old that have never given a bushel of fruit any one year, and one tree, fifteen years old, top grafted, sound and healthy, that has never given an apple. About fifteen years ago, a neighbor, on soil like mine, one mile from me, raised a splendid crop of Yellow Bellflowers. This, with one other instance of success, is all I know of this variety, except failures. We might multiply and enumerate the list of names that have failed, but refer to the volume of "Transactions" for 1876, where you find a list of forty-one varieties of apples necessary to make a list of ten varieties for eighteen different locations, in the judgment of eighteen of our best horticulturists in the state; ten varieties for profit for the previous ten to twenty years. How varied our experience; how few succeed, and the man on the gravel knoll is not alone in point of failures.

My first and greatest failure was the site. I failed to get a timber soil, or a prairie soil underlaid with clay or limestone. Some of our best locations for apples and pears are yet wild and covered with a second growth of timber; any kind of slope except the south and southwest, and the greater the altitude the better. No fear of getting on too high ground in Wisconsin. I refer now to the large fruits. I had, in my first planting of plums, in 1853, splendid success. This was at the foot of a sand bluff. The soil was a deep alluvium, with clay subsoil, but not on my 40 acres of gravel where I now live. Year after year, the Lombards, loaded to breaking, literally bore themselves to death, and although I have planted about twenty varieties and fifty-three of the choice kinds, where I now live, I never have had to prop up a single branch; in fact, a peck measure was all I ever needed to harvest my crop. After being compelled to set this down as another failure, I tried the wild goose plum, and this is not the first "wild goose chase" that I have had. For eleven winters and summers I have been after this goose and never plucked a feather; yet, as long as there is everything but the feathers, I have hope that some day I shall have something to fill at least a small pillow case.

My success with the Miner has been another failure on a larger

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scale. In 1860 I planted a row 30 rods long, eight feet apart. The trees are doing splendidly, except when we want plums, As nothing is made in vain, we are looking for the time when this row of trees will yield us 500 bushels of plums, at $4 a bushel. We will contract to sell them at $10 per barrel, to clean out the lot. This may seem all moonshine to some of you, but, at the rate some Miner trees have borne that I have sold, and some standing on my grounds, the time is coming when there will be a rich harvest. Perhaps it will be a waste of time to write of the money I have made raising cherries. Five bushels per tree, perhaps, is a little above the average crop, but, sold at $4 per bushel gives a good return for the investment. It will be useless t state that this has not occurred during the past three years, and one other important fact is, the trees are now dead.

If I should tell you just how much money I have made raising strawberries it might induce so many of my neighbors to go into the business that it might come out about like the onion trade at Green Bay, where all the Dutch are trying to get rich, like friend Smith. Since 440 bushels of strawberries have been raised on an acre, I have set my mark at 500 bushels. This is one of the things I have not done yet, but I have got the variety of plants that will do it, the Crescent seedling, from Connecticut, and this is no wooden nutmeg humbug either. This variety is so vigorous that, once planted, it will run out every weed in the lot, and all you have to do is to get on the fence and wait for the fruit to get ripe. One unpleasant thing about picking, it needs small feet and peck measures instead of quart boxes. If this kind does not fill a peck measure with forty berries, I have a dozen more new kinds which I may need bushel baskets to pick in. In fact I am thinking of the time 800 bushels per acre will be an average crop. This is only five bushels per square rod, and this has been done in garden culture.

Some things I have not done in the raspberry plantation: I have not succeeded in reaching yet $1,820 per acre, as an average return; but this is only five quarts per hill, four feet apart, at 15 cents per quart. When I get the number of quarts, then I do not get the price; but just wait till the new varieties give all they promise.

After all other experiments have failed, you want to get right down to business and set out a few acres of grapes. You can raise forty pounds to the vine, and four vines to the rod would give you a wheelbarrow load of over twelve tons per acre, and if you can get 10 cents per pound it will foot up the nice little sum of $2,560 per acre. Of course this is one of the things I have not done; but suppose you divide this by two, are you satisfied with the investment?

There are a good many other things I have not done. I have not yet got crazy on the cranberry question. Neither have I in-

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vested all I ever made in crab apples. I have never given $15,000 for a horse, or $20,000 for a cow, although I now have the cow that gave the fifty pounds of milk a day in January. I have invested some in hogs, but not last year. I know the difference between a South-Down and a Cochin China, but $50 a chick is too much for me. I am naturally sour enough, without running a pickle factory. Although I have done only a one-horse business, I have failed to make an assignment. One other thing I came very near not doing; that was, to write anything for this convention.

HORTICULTURE AND HEALTH.

DR. H. ALLEN, TOMAH.

Under the vignette of one of the most popular and extensively circulated journals of the land, are kept constantly displayed these words of George Washington: "Agriculture is the most useful, most healthful, most noble employment of man." Ten thousand eyes look upon these words a hundred times each year. Thousands of minds and hearts are encouraged and cheered by the solid confidence and restful hopes which they impart. They were the utterance of the older and more reflective years of their honored author, and expressed the deepest conviction and firmest faith of his mature years. They were his dying legacy to the industrious generations who should people the broad land for which he offered his life, and by whose faithfulness and ability its liberty was gained and its enemies conquered. No truths were ever uttered more certain and more lasting than those which contained for their central idea the fact that the tilling of the soil is the most natural employment of man. Blessings, rewards and crowns come oftener to and sit easier on the heads of *land* lords than on any other potentates of earth. Sometime in his life almost every man, be he mechanic, merchant or professor, or whatever occupation he may follow for a livelihood, feels a strong desire to own something of mother earth; to possess a spot where he can see his own land give forth its products under the labors of his own hands. What a rest and strength and exhilaration there is in the sight of the springing blade and the opening bud; in the voices of the singing birds and the bleating flocks and the lowing herds; in the sweet morning air laden with the fragrance of a thousand flowers, or the scent of the new mown hay; in the clear, bracing health from off the numberless hills, or the waters that sleep or lave at their feet. Almost every man comes to the day when he longs for his natural home; the cottage by the brook, and the orchard

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by the barn, and the garden by the door; to live on a farm and be in reality, though perhaps not in name, a farmer. Agriculture is a general term, embracing all that cultivation of the soil which supplies almost entirely the food and raiment of the family of man, from the cattle upon a thousand hills whose fattened quarters enrich the loaded markets, to the scanty garden vegetables that cheer the table of the poor, or the golden and purple fruit that sits so temptingly upon the sideboard of the rich.

Horticulture, on the other hand, is more limited in its significance. From "hortus," garden, and "cultus," culture, it is confined to that class of products which is usually raised in that smaller portion of the farm, enclosed in the orchard and garden. Fruits, flowers and vegetables are its synonyms. Agriculture embraces horticulture, and as the less is contained in the greater, so the general principles which apply to the great whole, are applicable also to its various parts. We think, therefore, we are justified in adopting the truthful remark of the honored father of our country, as a resultant truth of horticulture, and in placing at the head of our columns the slightly modified words: "Horticulture is one of the most useful, most healthful, most noble employments of man." It is the second attribute ascribed in this eulogy to which we propose to devote this paper; to the healthfulness of the occupation of horticulture, the cornucopia of vital strength and beauty and vigor that she holds in her charitable hands, the ruddy cheek and sparkling eye and elastic tread which the goddess of fruits and flowers and vegetables vouchsafes to her devotees, the joy of heart and strength of hope which she brings to gladden the daily efforts of her faithful servants.

The value of good health, no one can describe, and few know how to estimate. The world soon learns how to weigh out its gold and silver in grains and pennyweights, and carefully measure bullion, but it has no scales delicate and accurate enough to measure the value of pure air, a cheerful spirit and a constant, healthful employment. We bury millions of weak bodies in premature graves, for want of such due estimate, and yet we bestow less thought and anxiety upon such a loss of human worth and talent than we do upon the loss of fewer talents of the precious metals, by the injudiciousness of either public or private enterprize. Without health, neither money or life is of any considerable value. And yet, how few are ready to leave a lucrative employment which is slowly and surely undermining their life, for a more healthful one which promises less of glitter and cash. "The most money for the least labor," is the shrine at which the people worship; the Moloch on whose altar they sacrifice themselves and their children. It is the syren voice that is singing the nations to their fatal sleep. In this deceptive sentiment, this basket of artificial flowers, lies coiled the serpent whose fangs will destroy the life of every victim who receives it. Inactivity, impure

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air, improper food and drink, venturesome and uncertain monied enterprises, and their consequent failures and downcast and burdened spirits, are the fertile pestilences that infest the earth, and send large brained men with paralysis and heart disease to premature graves; that steal the vital strength from millions of suffering mothers, and crowd the burdened cemetery with little mounds whose frequency and tender associations tax the time of poets and sculptors to portray, and the labors of medicine to lessen. We offer as a solace to these evils and a great reformer of these errors, the single word and simple occupation of Horticulture. We bespeak the reflective moments of such as desire the blessings of a vigorous life, a healthful constitution and cheerful days for themselves, and a prospect of strength and success for their posterity.

We say first, then, that horticulture promises physical health in the opportunity it affords for the inhalation of a healthy atmosphere. Want of pure air is a fertile source of ill-health. How many thousands of our race are shut up in illy-ventilated rooms, day and night, artisans, mechanics, merchants, lawyers, clergymen, teachers, women, every one of them nearly. How limited their supply of pure oxygen. Every breath of a full-grown man requires twenty inches of pure air; every hour 25,000 cubic inches; every day 600,000, or 350 cubic feet.

Think then of the rooms fourteen or sixteen feet square, and many not half that size, in which such multitudes of the human family spend their lives; containing not one person only, but three, four and five in the same apartment and occupation, breathing over the same air, laden with poison of the effete matter cast off from their own systems, relieved only by what little oxygen can gain admittance by the few crevices which lead from these rooms to the outer world. And then compare their means of healthful lungs and pure blood with him who handles the pruning knife and saw in the open orchard; or the hoe and rake in the garden; or the trowel and scissors among the evening flowers.

The blood of the one becomes dark, and purple and sluggish, and his nerves torpid; the blood of the other is bright red, and leaps through the arteries like a young roe; warms the extremities, and mantles the cheek, and fills the expanded lungs, and goes laughing through all the avenues of the body, carrying joy and exultation to every nerve and fibre of the system.

What a relish such a morning bath of oxygen gives to the breakfast table, and what renewed strength and vigor to the system to enable it to throw off the poison of the necessary confinement of the day, or to bear up under the taxations of business as a artisan, or student or mechanic, or other indoor laborer. The leaves of vegatation exhale oxygen, the food of the lungs, and absorb carbonic acid gas, the cast-off poison of the blood; and hence to dwell among the leaves and blades and flowers is to

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dwell among the fountains of life and the ever present messengers of health. Doubtless it was the Divine plan that man should not only sit under his own vine and fig tree, but that he should cultivate his own orchard and garden, that he might gain the trio of blessings, the reward from the labor of the cultivation itself, the pure and healthful air it furnishes to the lungs, and the sweet consciousness of the rightful ownership which such a purchase accords.

Horace Greeley once gave answer to the frequent calls of unoccupied youth, "Young man, go West." Had he said "Young man, go out into the orchard and garden and go to work with a will and with brains," then let him go east or west, north or south, and he will accumulate both wealth and health, happiness and a long life, and a good vigorous old age to crown his successful enterprise.

Horticulture furnishes good food. What records of suffering, and disease and death lie along the track of improper food. It is said that 60,000 drunkards drink themselves into dishonorable graves each year in our land. But we believe more than twice that number eat themselves into pain and disease and a thousand ills, and finally into the grave of a shortened life, every cycle of our planet. Improper and excessive food is the flaming sword cutting both ways, keeping men out of the paradise of health. But the products of the horticulturist are the most healthful of all foods. How the race takes on flesh and health and good cheer when the autumn comes, and the table and the store are laden with fresh fruits and vegetables from garden and orchard. "Give me fruit or I die," says the dyspeptic. "Go to the vineyard, thou frail woman," says the doctor, "and thy strength shall be renewed." No record has been made, or doubtless can be made (so great is the number), of those who have been saved a "fit of sickness," or relieved from the already present ravages of disease by the incoming of small fruits and the continued prolonging of the fruit season by the products of orchard and garden. Apples will cure dyspepsia; tomatoes will drive away the "liver complaint;" blackberries will stop dysentery and diarrhœa, and grapes are good for indigestion. There is scarcely a fruit which the horticulturist brings in his plentiful basket which has not in it some almoner of relief and element of strength for the waiting stomach and needy system of man. As a basket of flowers for man's æsthetic nature, so a basket of fruit for his physical nature. So appetizing, so relieving, so toning and invigorating to every tissue that its influence reaches. All hail to the good food from the orchard.

Horticulture is an employment which does not injure the health by its severity. Too severe toil is oftentimes the cause of ill health. The smithy, the foundryman, the lumberman, the mason, the coal digger, and even the husbandman, who clears a forest

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farm, often live out less than half their days. Too hard labor has undermined their health and buried them ere their work was half accomplished. Horticulture, though requiring diligence which is healthful, yet makes no demand on severe exertion that breaks down the tissues. It is mild, invigorating labor. A weak man even may tend an orchard or a garden and grow stronger every day. Aye, weak woman, or a frail girl in her hasty growth can find a field here a thousand times more fertile of health and strength, and beauty and sweetness than ever existed in all the nauseating drugs, or hot fomentations, or cataplasms, or lounges and mattrasses, and perfumery, that have ever cheated the hopes and fostered the weakness of the human frame. The labor of fruit and garden culture is easy and entertaining. It is natural and instructive. It is healthful and lucrative. It breaks no bones. It sprains no ligaments. It exhausts no muscles. It ruptures no tissues. It does not bow the frame, nor cripple the limbs with toil. It does not wrinkle the face all over with premature furrows, and crowd the weary mind with discouragement and sadness, and laden the head with grey hairs long before the years of manhood are half spent, or the early born children are old enough to lift the burden from parental shoulders. It's labors are light and refreshing; quickening the powers of life, and pointing with unerring finger to a long, healthful, joyous old age.

Horticulture is a means of recreation. Forest and garden culture furnishes one of the most delightful fields for the employment of unoccupied hours. The planting, nurturing, trimming, budding, grafting and shaping of orchard trees supply the hands with the means of healthful diligence. The study of their swelling buds and shooting leaves; the length and size of their branches; the shape and style of their general growth, the quality and quantity of their bearing, the times of their fruit ripening, the soil and protection needed for their best developement, and the climates in which they flourish, the numerous diseases to which they are subject, and their remedies, the parasites that prey upon each and the means of their destruction, the varieties adapted to several localities with which you may be interested, such are some of the many subjects for a pleasant and instructive occupation of the ready mind which the orchard affords, and thus it fills up the waiting hours with healthful, mental employment. And then out of all this diligence and study, come those full autumn gatherings that fill the barrels and please eye, and gratify the palate, and regale the stomach and refresh the winter evenings with wholesome fruit, that makes better blood, brain and muscle, and better man every way.

The kitchen garden, with its little demands and abundant rewards furnishes an excellent field for this purpose. The selecting, the dressing, the spading, the plotting, the planting, the frequent weedings, and several gatherings, all help to fill up the unoccupied

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morning and evening moments, and chase away dyspepsia and the blues, and a thousand head aches, side aches and back aches, and stomach aches and mind aches, that brood and swarm around the indigestion and sluggish and burdened secretions of sedentary habits. And then the sweet, palateable and wholesome vegetables that come as a harvest of such occupation. What good blood they make. How easily do the organs of digestion convert them into the elements of human life. We do not look for the imps of disease in the wholesome products of the kitchen garden. Such a garden pays a double reward, in the healthfulness of its occupation, and the excellence of its products.

The flower garden is another field. It furnishes pleasing and and vigorous employment. Had we time and space here we might show you a perfect host of sweet angels of blessing that come up out of those floral spots of beauty, well planned and well tilled, by the side of the garden and fruit orchard, of a happy home. Hours unfilled with useful employment are an enemy to health. They burden digestion. They clog the physical reservoirs. They shorten life and hurry to an unsatisfactory grave. The garden and the orchard open their gates of relief and reward to such, and bid the captive enter, seize the opportunity and be free.

The employment of horticulture encourages cheerfulness of spirit, and hence is largely promotive of health. Anxiety to secure a livelihood or competence kills its thousands and cripples its tens of thousands. Pursued with the usual persistency and amount of labor and study of ordinary farming, horticulture fails less frequently than general agriculture to yield a profitable result. As a monied business it pays better than almost any other husbandry. It has even earned for itself the appellation of lucrative business. It is therefore freer than any speculation can be from the wear and tear of mind; it gives a freer scope for rest of spirit. Nothing is so promotive of disease as corroding care and sickening, weakening, and preying anxiety; no angel of health so mighty as "sweet peace of mind." A worthy editor of seventy-six years, informed us that he had not "suffered himself to be worried about anything for ten years, and for that whole length of time," said he, "I have never taken medicine, for I have never been sick; before this time I was frequently ill, but now, though beyond three-score and ten, every organ in my body is in perfect health and action, and all, I believe, because of my peace of mind." Aye, "sweet peace of mind." 'Twere better than a thousand nostrums; stronger than the power of Cæsar; richer than the wealth of Rothchilds. And I venture to say, without fear of contradiction, that there is no occupation more favorable for producing such a calmness and satisfaction of mind than horticulture.

The floral plat of the horticulturist is full of good cheer. There

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is no sadness in a flower. Who ever saw care and anxiety depicted on the face of a pansy or morning glory, or a violet or tulip; or even on the red and white visages that hang upon the lean and lank stalk of a hollyhock? Expressions are contagious, even of nature itself. There are few places like a morning stroll in a well cultivated flower garden to make a man feel good. The morning air, the sweet sunshine, the laughing flowers, are healthgiving, and shed their benedictions free as air on every one who will walk forth and take them. Who ever saw the sunshine in tears? or the sweet blossom in mourning? There is a gladness all through the flower garden, and over the orchard and her surrounding forest trees. Even under autumns blighting frosts she puts on her richest attire, her scarlet and purple and golden robes, and when, at length she must bow to the voice of destiny, she quietly lets go her richly painted leaves, and scatters them freely, joyfully and profusely over the bosom of mother earth, and into the lap of him who has planted and nurtured her and gathered her golden fruit, and now waits under her outstretched branches to receive her last bequest of colored foliage, to refresh his memory, to sweeten his spirits, and to adorn his winter apartments with the emblems of the past. Beyond a doubt horticulture is an antidote to wasting care and sickening anxiety. There is a large healthfulness of spirits in the cultivation of fruits and vegetables and flowers. Look, then, at the array of blessings which this employment offers to man. It furnishes one of the best opportunities for securing a full supply of the purest atmosphere, the food of the lungs and the vitalizer of the blood. It is the natural, unfailing source of the best of food; it furnishes a good livelihood; its labors are light and strengthening; its occupation is like a recreation; its tendency to, and resources of healthfulness of mind are certain and inexhaustible. Thus she offers large, rich, and choicest gifts; healthful air, healthful food, healthful labor, healthful blood, healthful brain, healthful spirits, healthful body and mind, every way healthful man, the noblest work of of God. "Horticulture and Health!" They are almost synonyms. They are divinely wedded. What God hath joined together let not man put asunder.

Let us go, then, like Washington, reflect, believe, act and live. Let there be ten orchards where there is now one. Let fruit and vegetables become more largely our constant food. Let us have less pork and fine flour that burden the stomach and clog the secretions, and shorten and make miserable our lives, and have more grapes, apples, peaches, strawberries, currants, tomatoes and every vegetable and all manner of fruits small and great which our hands and health will permit us to raise, until the barrels and shelves and cans and cellar corners are filled with these wholesome products so divinely designed and given for the health and happiness of the race.

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Then let us take our children and instruct them likewise. Let the boy, and the girl also, be taught to find pleasure in budding and grafting in the orchard or on the rose bush, in grafting flower roots for the hybrids and fruit roots for the field planting. Let them learn to shape the trees in the orchard to their taste, and to designate the name and character of the fruit by the style of the growth of the tree. Teach them how to plot a flower garden and to cultivate it; how to inoculate flower roots and generate new varieties, how to find soils for their most successful growth, how to combine colors, arrange the floral wreath or basket for the greatest effect. Let them watch the work of their own hands and see its changes, development and results until an interest is awakened in their employment, and a relish and a charm shall arise like spell of a fairy tale and hold them to a love of their occupation with a strength equally binding and a hundred times more healthful and noble than any enthusiast for wealth or art ever could experience. The love of nature's products is more elevating and healthful than any other love can be. The Divine Artist has more skill and the Divine Benefactor has more riches to display than any of his most gifted children. Will we not then go forth and take these proferred riches and teach our children to admire this infinite skill and to engage in those healthful employments, and reap their untold rewards.

The sentence with which we commenced this paper expresses one of the most valuable truths ever uttered. The exhibition of it at the head of the widest circulated agricultural paper in the land for 25 years has not diminished one jot from its grandeur or effectiveness. Such is the nature of fundamental truths; repetition intensifies them; friction brightens them; exhibition gives their worth to the world. This sentence ought to stand at the head of every agricultural paper printed, and in its slightly modified form ought to head the columns of every horticultural periodical, until its invaluable truth has been so oft repeated before the world, that its fundamental lesson shall become the profound conviction of the minds of men, and they shall be moved to irresistable action from it; until our over-filled towns and crowded cities, those hot-beds of disease, crime, insanity, misery and pauperism, shall be eviscerated of their suffering contents, and the people return from worshipping false gods; from idleness, and revelry, and crime, and despair; from fetid air and loathsome apartments and unfit food; from speculative rivalries and dishonest and unproductive employment, to the natural labor of man; the rural industries of earth; to the healthful and productive avocations which the Divine Architect has so wisely designed.

We close with a single quotation: "High scientific authority says that the alarming increase of lunacy and suicide is due to the aggregation of people in metropolitan centers, where business rivalries are intense, 'and fortunes lost in a day.' The doctors

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are no doubt right about the matter. Such facts should cause the blessings of rural life to be more highly appreciated than they now are." The most attractive and valuable portions of our modern cities are not their art productions; their huge manufacturing prisons; their colossal warehouses; their magnificent streets of marble and iron fronts, nor their palatial Beacon Hill or Fifth Avenue residences. Nor their museums and picture galleries and state and government buildings, or even their schools and colleges of learning. But it is their Honewell gardens and Central parks, and their Vick's and Hovey's floral and garden farms to which we invite our visiting friends; and above all, and of *more* value than all, are those rural suburban homes that have come so recently to encircle those metropolitan centers. Those sweet, quiet, healthful spots of natural beauty that bespangle their surrounding hills and plains. These are the places to which our merchant princes, and manufacturing lords, and govermental czars, and educational savans, and every successful citizen, teacher and common laborer *alike* love to resort, and delight to honor. These are their nightly and Sabbath homes; their cherished and sacred sauctuaries of rest and thought and recuperation. Here is where they get their strength and their manhood renewed, and they are the jewels of horticulture. Let their number become greater, their influence broader and their healthfulness stronger and sweeter while fruits and flowers shall grow and men and women live to enjoy them.

TREES FOR THE ROADSIDE AND FARM.

H. M. THOMPSON, ST. FRANCIS.

Well situated and properly distributed woodlands are indispensable requisites to a successful agriculture. The immortal Humboldt says: "The forests are nature's reservoirs, the destruction of which is a two-fold calamity." 1st. Scarcity of wood for economic uses. 2d. Scarcity of water." To which may be added, 3d. Deterioration of climatic condition essential to the health of man. 4th. Lessening of agricultural productions. 5th. Loss of individual and national wealth, diminution of population and powers, causing a relapse to barbarism.

By means of the destruction of forests, climates have changed to great and sudden extremes, surface soils have been abraded; the beds of rivers elevated; level lands inundated by torrents; the mouths of rivers blockaded by sand bars; harbors destroyed; cities buried by drifting sands; soils have become sterile and vegetation impaired or destroyed; agricultural communities have

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been scattered and reverted to barbarism, and with forest products no longer at command, nations have ceased to exist.

Intolerable extremes of climate, sterility of soil and scant population exist at the present day in Central Asia, Asia Minor, the Desert of Sahara, and the deforested countries bordering upon the Mediterranean Sea and the interior provinces of Portugal and Spain. These countries, which, according to historical records and modern researches and observations, once teemed with a dense and active population, possessed the elements of a progressive civilization, and were the germs or sites of mighty empires, are now, since the destruction of their forests, only known in history, and are inhabited by semi-barbarians or savages, earning a precarious subsistence by the chase, or from the grazing of scattered flocks and herds upon the scant vegetation of their now treeless plains. Since the destruction of the forests in the interior of Portugal and Spain, and in the Maderia and Jamaica Isles, the decrease of humidity in the atmosphere and rainfall has resulted in droughts, causing an annual lessening in the yield or a failure of crops, which has resulted in an abandonment of general agricultural pursuits.

According to Hartwig, "In the Barbodoes, in consequence of the extirpation of the forests, frequently not a drop of rain falls for three years. In St. Helena the quantity of rain has increased in the same proportion as new woods have been planted, so that it is now about double what it was when Napoleon First resided in the island. In Malta, since the trees have been felled to make room for the increased cultivation of cotton, the rain has very much diminished." The Department of Var, France, abounded in numerous rivulets and streams, but in the year 1821 the olive trees, which from their numbers almost formed continuous woods, were frozen, and afterwards felled, a drying up of the streams was the consequence.

Prof. Dove says that "in the Cape Verde and Canary Islands the forests were felled, those in the Azores were burned, and these islands were transformed into naked rocks; rains which formerly irrigated the earth were dissipated or diminished." From similar causes Bousaingault says, "the streams all dried up in a neighborhood in South America; wars with Spain drove away the colonists, the woods again sprung up, and streams again began to flow in consequence of rains."

In making observations upon the result of forest destruction in South America, Humboldt says, "It has been remarked as increasing cultivation lessens the extent of the forests, the local plantations become less flourishing, and for this reason, these plantations are diminishing in number." Similar results are observed in the former tobacco producing districts of Virginia and Georgia, and in the winter wheat growing districts in New York, southern Michigan and eastern Wisconsin. In these states it is

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noticed that since the lessening of the forest area, the sources of streams have dried up, the distribution of rain fall is more irregular, the yield of crops has decreased so largely, that in some portions of Virginia, the older tobacco plantations, once a source of wealth, have been abandoned, and the cultivation of winter wheat has been almost wholly abandoned in the timber region in Wisconsin, bordering on Lake Michigan, owing to a greatly diminished yield and liability to winter kill.

Where the woodlands have been destroyed, "one of the soonest noticed results," says Dr. Lapham "is the disappearance of the springs and the shrinkage of the streams." To this may also be added, the washing of the surface soils, of the high and rolling lands, and the elements of fertility they contain to the low lands or into the rivers, causing obstruction to navigation by the formation of sandbars and the blockade of harbors. The quantity of soil that is thus lost to agriculture can only be approximately estimated. It is stated that the quantity of sediment annually borne by the Mississippi to the Gulf of Mexico is sufficient to cover a surface one mile square to the depth of 268 feet. If it be estimated that the sediment transported by all other rivers in the United States, equals the quantity borne by the Mississippi, and the average depth of the surface soil be estimated to average four inches, and the washing away of the soil be confined to a limited locality, the area of farm lands thus effectually despoiled for present agricultural purposes in one year, would equal the enormous sum of 1,608 square miles. Hence, aside from the effects of changed climatic conditions caused by the destruction of the forests, it may safely be concluded that the abrasion of the soil itself and the washing away of the organic and chemical elements of fertility it contains, will cause the most fertile lands in a few centuries at the most, to be changed to sandy, barren deserts. Thus the records of history, the observations and teachings of science and political economy, and the interests of agriculture, admonish us that in order to avert future calamity, some system must be devised for the preservation of a proper proportion of the original forest area, an extension of cultivated forests in treeless regions, and the restoration of woodlands on deforested farms.

TIMES OF PLANTING. — The prevailing method of planting forest trees in compact area, regardless of the requirements of men, animals and crops, for shelter, and without regard to an economical distribution of forest products, is a method which has been copied from the practice of individuals and the potentates in Europe and the British Isles, where the principal reservation of forests are confined to one side or one corner of the farm. The reservation and the planting of forests in compact areas, in broken and mountainous countries, or sections of countries situated within the limits of moist trade winds, or in close proximity to bodies of water, or oceanic currents over which the prevailing winds

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pass, may be admissible, although even in these cases not as climatically and pecuniarily beneficial in result as might be derived from the adoption of the more systematic method in the form of belts and groups, distributed and proportioned to the wants of each farm.

The form of planting trees by the roadside has been either a single or double line of trees, at one, two or more rods apart in the row, and the rows six or eight feet wide; the object of this form of planting being ornament and partial shade only. Having the single object of ornament in view, such a system of roadside planting may be admissable, but there are other objects to be accomplished; it is necessary to shield the soil and crops from the intense heat of the mid-summer sun; to check the velocity of the winds and thus retard the exhalation of moisture from the soil and vegetation; to fill up nature's reservoirs of moisture in the soil, by cooling and condensing the aqueous vapor in the atmosphere; to store up and modify electrical conditions, and regulate their distribution at those particular periods of the growing season, when the grasses, vegetables, cereals and fruits are approaching their period of greatest development, and consequently require the most favorable atmospheric conditions to enable them to complete the final process of growth; to prevent the occurrence of frost in early spring and late autumn, and thereby lengthen the summer and shorten winter; to retard the velocity of the wintry winds, and thereby lessen the radiation of latent heat, and to modify electrical extremes. It is evident, therefore, that to remedy the evils incident to all treeless countries, forest planting should be of such form or forms, and distributed in such a manner as will most effectively secure the greatest obtainable modification of climate.

Another point to be considered in deciding as to the best form of forest planting, is the question of transportation, viz.: that the wood products designed for economical uses may be utilized at the lowest possible cost of production and transportation. In order to supply treeless counties with forest products, the lumber has generally to be transported long distances, at an enormous loss in waste of material at the points of manufacture, and cost of transportation to points of consumption. According to the United States census of 1870 the value of manufactured lumber — including shingles and staves — amounted to $210,159,327. In the present manufacture of lumber, owing to the cost of transportation to distant markets, only the most valuable portions of of the trees are utilized. The slabs, and other imperfect products and the top portion of the trees which go to waste, may be estimated to be equal in bulk to one-half of the utilized products. If these waste products could be utilized for fuel and other purposes, as would be the result if the timber lands were properly distributed, the value of the waste may be estimated at one-half the value of the present utilized lumber products at the places of

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manufacture. If the cost of the transportation of the lumber from the points of manufacture to the points of consumption, with the commissions and profits thereon, be computed to equal the value of the lumber at the places of manufacture, the annual saving of the waste products and of the cost of transportation, that would accrue to the consumer if the products were grown and manufactured at the points of connsumption would amount to $325,239,090.50. To this saving of cost may be added the greater intrinsic value which cultivated timber is known to possess in the qualities of toughness and strength, as compared with timber of native growth.

In the adoption of a system of cultivated forests, the plantings must be distributed in such manner as will best tend to benefit the individual planter, by affording shelter to buildings, animals and orchards in the winter, and shield his crops from the intense heat and scorching winds of summer, and prevent the wasting away of the surface soil by torrents, and the production of timber products sufficient to supply the requirements of the farm. In order to secure these results, the form of planting must conform to the configuration of the surface of farm lands. These may be classed as either rough, hilly and broken, or comparatively level surfaces. On farms that are rough and hilly the principal planting of trees may be made in groups on the hill sides as the principal means of shelter and for the prevention of the abrasion of soil. It is stated by Emerson in his Forest Trees of Massachusetts, "that gradual sloping hills do not afford protection from winds, and that winds glide over hills in a similar manner to the water sliding over a mill-dam." While it is admitted that in general, naked hills do not afford shelter, it is readily seen that if the hills are covered with trees composed wholly or principally of evergreens, the foliage presents countless points of resistance to air in motion which causes generation of heat, and the elevation of the air current so that it passes over, or into the valley beyond, before assuming its normal temperature and wonted velocity.

SHELTER-BELTS. — In adopting the form of shelter-belt planting as the best system for level or undulating farms, the setters of the trees may be confined to the boundaries of roads, gardens, orchards, buildings, stock yards and farms. An additional system of cross-belts may be necessary to ensure the earliest obtainable shelter to maintain or increase the yield of fruits and other farm crops, and to provide for the production of wood for fuel and general farm uses. The width of shelter-belts should be determined by the situation, needs and means of the planter. For the purposes of experiment, ornament and protection, a belt consisting of one, two or three rows might be admissible, but if the belt is designed for supplying the needs of the house with fuel and the farm with material for stakes, posts, fencing, and timber and di-

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mension lumber for market, it will be necessary to make the belts of considerable width. The area of shelter afforded by belts at right angles with the wind is estimated by Marsh at eleven feet for each foot in height of the belt, and if the air moves in a horizontal direction, he says, "no doubt its mechanical effects are felt at a much greater distance." This statement being true, it is also believed that the modification of climatic conditions is coextensive with the area of a general system of shelter-belts established in contiguous territory. In the frontispiece to this volume, is given a representation of the manner in which the farm and farm buildings may be protected and beautified by these belts and hedges of evergreens.

As yet, in this country, we have no published data that enables us to form an estimate of the area of woodlands necessary for economic uses. "In Germany," says Dr. Warder in his able report upon European forestry, "where the government has paid more attention to forestry than any other nation, and where the supervision of the forests are principally under the control of the government, the proportion of woodland is 26 1-5 of the whole area." It is presumed that while such a proportion in that country may be sufficient to supply a people whose frugal wants have been established by many generations of educated habit, it would not be sufficient in this country, where the cutting of the forests has been left to the caprice and cupidity of individuals, whose habits of prodigality and destructive tendencies have been limited only by their opportunities and possessions.

By reason of causalties and varied use the area of woodlands in the New England and Atlantic sea-board states has largely diminished, and instead of being producers of forest products in excess of their wants as in former days, some of them now rely upon importation from Canada and other states to supply the deficiency. In the states of Ohio, Indiana, Michigan, Wisconsin and Minnesota the primeval forest is rapidly diminishing, and if not checked, their once magnificent forests will only be known to future generations by the pages of history.

In view of these facts and the probable results, it is evident that it will not be wise to rely upon the present original forest-area for a supply of forest products outside of the present limits of production, for a longer period of time than it will require to produce cultivated timber large enough for economic purposes. In view, therefore, of climatic necessities, and our proverbial prodigal habits of waste and the increasing demand for wood products, and the consequent probable exhaustion of the present forest supply at an early future day, it is to be presumed that one-third of our farms should be devoted to forest purposes. The system of group and shelter belt planting, if adopted by every farmer and land owner, besides the benefits of increased yield of farm crops, and the saving of the cost of transportation of wood products, would place

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the forests immediately under the watchful eye of the owners, thus guarding against the chances of loss by fires, the prevention of waste in the manufacture and by decay, and would increase the facility with which the necessary thinnings could be made without injury to the growing crops.

PREPARATION FOR PLANTING. — In planting in the form of groups upon hill-sides, it may be assumed as a rule that cultivation of the soil will make it liable to be washed away by rains or blown off by winds, leaving only naked rocks or a barren subsoil. It is therefore advisable to adopt the European system of planting, which is quickly and cheaply done, by using small plants varying from six to twelve and fifteen inches in height. The setting of these plants is accomplished by making two spade cuts in the soil at right angles with each other. In making the last cut the blade of the spade is left in the ground, and the handle pressed down to the surface of the ground, and the triangular piece of sod is thus raised, the plant being inserted at the corner of the excavation, the spade is withdrawn and the sod drops by its own weight to its former position, and covers the roots of the plants; the foot is placed upon the sod, which presses it firmly into its place; one or two steps forward are made, and the same process is repeated until the plantation is completed. By this simple method, two men to use the spades, with an active boy to handle the trees, will plant 3,000 to 4,000 set per day. It is presumed that there will be no after cultivation, as the natural vegetation upon hill-sides and rough lands is usually scant, and if left on the ground will prove beneficial until the young trees become established and attain sufficient size to shade the ground with their foliage in summer and the fallen leaves protect their roots from the alternations of freezing and thawing in the winter.

While this method of planting without cultivation is the best for groups on the hillside, it would not be advisable, as a general rule, in the planting of shelter-belts. The soil of lands adapted to shelter-belt planting is usually fertile and produces such a luxuriant growth of vegetation, as to take entire possession of the ground. The growth is generally so rank that unless the soil is properly prepared before planting, and cultivated until the trees are well established, the plantation will probably result in failure, as the superabundant growth of grasses and noxious weeds will absorb the plant food from the soil at the expense of the trees; and hence the necessity of, at least, one year's preparation of the soil before planting.

METHOD OF PLANTING SHELTER-BELTS.—When the belt is to consist of more than one row, the width of the rows may be four or six feet, and the distance apart may vary from two to four feet, the proper distance to be determined by the manner of the growth of the kinds of trees which are to be planted. In case the belts

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are intended for the production of timber, as well as to afford shelter, close planting, with a view to ultimate thinnings, will be desirable. By planting evergreens on the margin, and deciduous trees in the centre, the evergreens will, by their branches and dense foliage, afford protection to the interior trees of the belts, and help to secure a growth of long and straight bodies.

The planting may be cheaply and expeditiously done by plowing furrows at such distance apart as is determined for the width of the rows, to the depth of five to eight inches, the precise depth of the furrows to be proportioned to the size of the trees. To prevent injury to the young trees by exposure of the roots to the sun and drying winds while planting, they may be placed in buckets of water, and a few taken out at a time, and planted in furrows already prepared. They should be placed in the furrows at the required distances, and earth be drawn on to their roots with the hand or foot as is the most convenient, and firmly pressed down with the foot. After the plants are thus placed in the rows, a light one horse plow may be used to throw the earth up around the plants. By this method, with an active boy to distribute the trees, and two men to place them in position, the number that may be planted in a day will vary from five to ten thousand according to the condition of the soil, the expertness of the men, the size of the trees and their distance apart. As the heat and drought in August and September are usually excessive, the plantation should be mulched with coarse manure, straw, hay, sawdust or other coarse material that may be convenient. There will always be some loss from improper handling and planting, the depredations of insects, or injuries received in the cultivation, and it is advisable to have a stock of plants growing in nursery rows at hand to fill up vacant places in the plantation.

CULTIVATION. — The cultivation of tree belts for two or three years after planting, may be regarded as indispensable; but when the trees are exclusively firs, pines and spruces, this cultivation need not continue later than the first week in July, as these trees complete their upward growth about that time. By discontinuing the cultivation at this period, the subsequent growth of weeds protect the young trees and the soil from the intense heat and drought that occur later in the season, and is beneficial as a mulch in winter. Without some sort of protection, the young trees are liable to have their roots drawn out of the soil by the alternation of freezing and thawing. When they are a mixture of evergreens white ash, European larch, and other deciduous trees, which do not complete their season's growth until autumn, the cultivation must be continued until August, and to guard against injuries to the trees in winter, the earth should be thrown up to the plants with a shovel plow. The following spring this ridge of earth may be leveled with the plow or cultivator. In case carrots, turnips, beans, or some other hoed crop are grown between the rows

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of trees during the period of the cultivation of the latter, the value of the crop will materially reduce the cost of cultivation. At the expiration of two or three years the trees will be so well established that no further cultivation will be required. Where the belts of trees are liable to be injured by stock, some protection should be given; a hedge or post and wire fence may be made along the margin. When the belts become well established, the wires may be fastened to the outer rows of trees, and thus secure a permanent, durable fence. A line fence could be constructed at comparatively small expense by getting overgrown stock from nurserymen or other sources, and setting for line posts along the margin of the belt, and attaching the wires to them.

KINDS OF TREES FOR SHELTER-BELTS. — In Illinois, Iowa and other states. single lines of trees designed for shelter, have been planted, consisting of poplar, willow and cottonwood. Although these trees are rapid growers, the results of such plantings have not in all respects proved desirable. Being deciduous trees, they afford no other protection against severe winter winds than the radiation of latent heat, and such obstruction to their force as the trunk and leafless branches of the trees afford. The habit of the root growth of these kinds being at or near the surface of the soil, and being gross feeders, it is found that the soil adjacent to the tree belts is impoverished, and rendered untillable by the matted mass of roots and sprouts, and unsuited to the growth of crops to a distance on each side of the belts equal to the height of the trees. The wood of the cottonwood, willow and poplar is of but little value for economic use, except for fuel, and its value in this respect is far below that of the oak, ash, beech, hickory and maple, and also less in value than the wood of the spruce, fir, pine and larch. The entire wood product of the cottonwood trees cannot be utilized to any extent except for the specific purpose of fuel, while the manufactured products of the ash, larch, pine, etc., are in constant demand for general use. The other products, comprising the slabs and top portions of the trees, being of equal or greater value than cottonwood for fuel.

Although cottonwood, etc., may be propagated by cuttings, or the plants purchased at one-fourth the cost of such valuable trees as the pine, spruce, hickory, black walnut, white ash and European larch, which are in every way adapted to the uses of shelter and economy, yet the cost of planting and cultivation of the inferior and the valuable kinds is equal, while the difference in the value of wood products is enormous. This difference may be illustrated by comparing the values of a plantation of cottonwood and of white ash, each acre to contain 108 mature trees; the cottonwood to average one-half cord of wood per tree, and the white ash to average 300 feet of lumber, surface measure. The value of the fifty-four cords of cottonwood, at $4 per cord would amount to the gross sum of $216. The value of the white ash lumber pro-

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duct of 12,400 feet, at $40 per 1,000, would be the gross sum of $4,960. If it be assumed that two crops of cottonwood can be grown in the same length of time as one of white ash, the one acre of white ash would yield the gross sum of $4,528 in excess of the two crops of cottonwood.

For the purpose of producing the soonest possible supply of fuel for the farm, the planting of a limited area of cottonwood may be admissable, especially on treeless farms, situated long distances from supplies of wood and coal. It is estimated that the average consumption of oak wood fuel per family is 15 cords per annum. If cottonwood is substituted for oak, perhaps 20 cords per annum would not be too high an estimate. If it be assumed that a cottonwood plantation would yield an average of two cords per annum, the area of land required for the production of fuel would be ten acres, and if one-fourth of each 160 acre farm is devoted to cultivated forests, it is thought that ten acres planted to cottonwood and thirty acres planted with valuable kinds of trees will afford all the protection and timber required for the farm and general use.

The selection of the valuable kinds of trees to be planted may be determined by the soil, situation, and requirements of the planter. The German forests, according to the report of Dr. Warder, are composed of fifty-five per cent. of pines, firs, spruce and larch. In case such a proportion should be adopted in the United States, with an average of five per cent. of cottonwood, the remaining forty per cent. may be composed of hickory, walnut, maple, oak, ash, birch, honey locust, catalpa, etc., in whole or in part, according to their adaptation. For single or double row shelter-belts, evergreens are absolutely indispensable. For this purpose the Scotch pine and Norway spruce, in every way answer the requirements for shelter, the Scotch pine being especially adapted to a diversity of soils and exposed situations. For a three row shelter belt, Scotch pine and Norway spruce, one or both, may be planted in the outside rows. The European larch for dry soils, and the white ash for moist, rich soil may be selected as the best kinds for planting in the middle row. For belts of greater width, evergreens should be planted on the margin. The inside rows may be composed of white and pitch pines, black walnut, cherry, the maples, birch, European larch, white ash, and such other kinds of valuable trees as are suited to the soil and locality. The proportions of the kinds of trees may vary according to the extent of the belts.

The size of the trees suitable for group and shelter-belt planting, may be much smaller than is usually thought. This has been demonstrated by the universal practice in Europe, and experiments in this country, in the successful use of plants varying from six to ten and fifteen inches in height. The advantages of using small plants in preference to large trees, are the lower

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cost prices, cheaper transportation and lower cost of labor in transplanting. Fifty to one hundred of these plants could be planted in the same length of time required to plant a tree five or six feet high. The cost of plants at the forest-tree seedling nurseries, of white ash, Norway spruce, Scotch pine and European larch, varying in price according to the kind, size and quality, from three to fifteen dollars per thousand. Five to ten thousand of these plants may be packed to ship safely in a box five to six feet long and twenty by twenty inches square. The weight, when properly packed for distant transportation, varying from 250 to 400 pounds.

A more definite idea may be formed of the cost of shelter belts by reference to the following carefully prepared table:

TABLE *showing estimate of cost of timber-belt of three rows for shelter. Rows four feet wide, plants four feet apart in the row. Outside rows Scotch pine, middle row Norway spruce. The tree-belt to enclose four sides of the farm.*

SIZE OF FARM.	Length of belt in rods.	No. of plants required for three rows.	Costs of 6 to 8 inch plants, $7 per 1,000.	Expense of preparing ground and planting.	Expense of 3 y'rs cultivation.	Total cost.
160 acres	640	7,920	$55 44	$27 92	$60 00	$143 36
80 acres	480	5,940	41 58	20 94	45 00	116 52
40 acres	320	3,960	27 72	13 96	30 00	71 68
10 acres	160	1,980	13 86	6 98	15 00	35 84

In case the means of the parties will not admit of the cost of plants and labor required for a three row shelter-belt, or if the planter wishes first to experiment, and plant one row, the cost would only be one-third of the cost of three rows. The cost of one row Scotch Pine shelter-belt, allowing ten per cent. for casualities and not computing interest, would, at the end of three years' cultivation, be as follows: Around 160 acres, $52.56; eighty acres, $43.07; forty acres, $26.78; ten acres, $12.82.

This estimate represents the minimum cost of smallest size plants admissible. This cost may be lessened by using either European larch or white ash, and planting hickorynuts and black walnuts at the same time.

PROFITS OF CULTIVATED FORESTS.— While the planting and growing of timber in the form of groups and belts result in almost immediate profitable returns in the way of increased yield of vegetables, grasses, cereals and fruits. The pecuniary returns to be derived from the growth of timber and the value of wood products commence at a much earlier date than is usually sup-

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posed, especially when the groups and belts are of considerable extent and are planted in soils that admit of a mixture of a considerable number of valuable varieties of trees adapted to economic uses at different ages. The wood of the spruce, pines, oaks, and black walnut, being indispensable for general use, must, of necessity, continue in permanent demand, and their planting will be profitable, but as the trees have to obtain considerable size and age before the products are marketable, the pecuniary returns will be realized in the distant future. The wood products of hickory and white ash are in demand for specific uses in the form of hoop poles, etc., at the period of five to seven years after planting; and, at later periods of growth, for the construction of agricultural implements and other uses. The wood of the European larch is useful for farm purposes when the trees are small; for stakes, hop poles, fence posts, etc., and for more diversified purposes as the trees increase in age and size. Thus the wood products of hichory, ash and larch are in constant demand for various uses at an early period, from the date of planting until the trees attain maturity.

Close planting is necessary to ensure straight timber, and systematic thinnings are required to ensure healthful growth. If the belts are composed wholly of the late maturing kinds of trees these thinnings would have little or no value, except for the purpose of fuel, but with a suitable mixture of early and late maturing kinds, the young hickories, ashs and larches can be utilized as thinnings, at a profit. In estimating the value of the thinnings upon the basis of Prof. Sargent's estimate of the acreage yield of hoop poles from hickory plantations, at five years from the date of planting, to be $400.00, and that the acreage yield of white ash, at the expiration of seven years from the date of planting, aggregates the same value as the yield of hickory, and that larch cuttings, at ten and fifteen years from the date of planting, would produce the same value, the gross yield of wood products from plantations composed exclusively of a mixture of hickory, white ash and European larch in equal proportions, allowing ten per cent. for casualties, would be at the rate of $44.09 per acre, per annum, for an average period of eight years and two months from the date of planting to the time of cutting. If it be assumed that forty per cent of the area and group and timber belts is composed of a suitable proportion of hickory, white ash and European larch, and planted with pines, oaks, maples, cherry and black walnut, etc., so as to admit of the utilizing of the former kinds as thinnings, to the advantage of the remaining trees; the annual average, gross value of the thinnings, allowing ten per cent. for casualties, would be the sum of $17.60, per acre, per annum, for an average period of eight years and two months, commencing at five years from the date of planting. The computation of the average thinnings being based on one thinning of hickory at five

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years; one thinning of white ash at seven years, and two thinnings of European larch at ten and fifteen years respectively, from the time of planting. In making this estimate of the value of the thinnings, no allowance is made for the larger, intrinsic value which the wood of cultivated timber is known to have as compared with the wood of native forest growth. Neither is any account made of the value of a considerable quantity of wood obtained from the tops of trees in the last five years of thinnings, which can be utilized for fuel, it being presumed that the value of the fuel for farm use, and the maintenance or increase of the ordinary field crop producing capacity of the tilled lands by means of the shelter afforded by the timber belts will amply reimburse the principal and interest of the cost of planting, cultivation and care within a period of fifteen years from the date of planting, and from that period on, the yearly increase of shelter, and protection and supply of fuel and other forest products will remain a constant profit.

SACRED AND OTHER TREES AND PLANTS, SUPPOSED TO POSSESS MYSTICAL VIRTUES.

MRS. H. M. LEWIS, MADISON.

When God fashioned man after his own image and placed him in the garden, he implanted in his nature a desire to pay divine homage to something far above himself. All colors and races of mankind are endowed with this feeling of reverence and inspiration, and the sun, stars, gods, trees, stones, fire, idols and animals, have had worshippers since the beginning of time, and will have, until the end thereof, or until the world becomes civilized and christianized.

Man, as he existed in ancient times was an ardent worshipper of nature. He said to the earth "you are my mother, I came from you and to you I will return, therefore I love you." It is a delightful recreation to look back through the past ages and study out the beautiful truths that are shadowed forth through the old mythological fables of the Greeks, and Norses, which is the poetry of the world. According to the Greek mythology when the gods saw fit to remove a human being from life they reproduced him in a new form. Thus Apollo changed the modest Daphne into the Laurel evergreen and pure. Hyacinthus, a dear boy, greatly beloved by Apollo, being accidentally killed, that divinity caused the sweet Hyacinth, which bears his name, to spring from his blood when it fell on the ground. The boy Cyarissus, who killed by accident a favorite deer, was turned into the mourning cypress, and when the gods themselves wished to

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perpetuate youth, all that was required of them was to taste the apples in Aduna's box, that secured to them youth until the earth was destroyed.

According to the Norse mythology, man was made from a tree. One day, before any human beings were created, the sons of Bor (Odin, Hœner and Loder), were walking along the seashore and found two trees, and created from them the first human pair. The man they called Ask, and the woman Embla, (Ash and Elm.)

"They had not yet Spirit, or mind,
Blood, or beauty, or lovely hue,
Odin gave spirit, Hœner gave mind,
Loder gave blood and lovely hue."

In South America, the Indians have a low branched, thorny tree, which they reverence as the alter of Walleechee. Darwin says, it is situated on a high part of the plain, and is a landmark visible at a great distance. As it stands by itself without a neighbor, as soon as a tribe of Indians come in sight of it, they offer their adorations by loud shouts. Being winter, the tree had no leaves, but in their place numberless threads, by which the various offerings, such as meat, bread, cigars, pieces of cloth, etc., had been suspended. Poor Indians not having anything, only pull a thread out of their blankets or ponchos, and fasten it to the tree. Richer Indians are accustomed to pour spirits and matè (Paraguay tea) into a certain hole, and likewise to smoke upwards, thinking thus to afford all possible satisfaction to Walleechee. To complete the scene, the tree was surrounded by the bleached bones of horses which had been slaughtered as sacrifice. All Indians of every age and sex, make their offering, they then think that the horses will not tire, and that they themselves shall be prosperous.

Bo tree (*Ficus Religioso*), the tree of intelligence, is held sacred by the Buddhists, and planted near every temple, attracting almost as much veneration as the statue of Buddha itself. In the sacred city of Anarajapoora stands the oldest tree in the world of which the age can be ascertained by historical evidence. It was planted 288 years before Christ, and therefore now, if living, is 2,166 years old. If this country possessed a tree thus venerable, I am not sure but we should give to it a spirit almost divine. Its leaves are considered too sacred to be picked by the hands or touched by the knife, and are never gathered except as they fall from the tree. Pilgrims carry them away as sacred treasures. In front of this sacred tree is a stairway of ten or twelve steps, that leads to a platform or alter that surrounds the tree, where persons can be seen at their devotions during all hours of the day. This tree to the Buddhists is invested with wonderful sacredness. It is believed by them to be a branch of the identical fig tree under which Buddha reclined or sat cross-legged, as he is generally pic-

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tured when "he saw the illusory nature of all things, broke the last bond that tied him to existence, and stood delivered forever more from the necessity of being born again, being considered the culmination of his character, and the highest object of imitation to all his followers."

The *cedar of Lebanon*, the emblem of strength, prosperity and stability, is probably one of the most beautiful trees of the world, as it has been much celebrated from the most ancient times. It is often spoken of in scripture, and is the poetry of the old testament. The timbers used in the building of Soloman's temple, and his chariots, were of this durable wood. Of the celebrated cedars of Lebanon, but few remain, not more than 400 trees. The grove is of partly old and partly young trees, and about three-quarters of a mile in circumference; most of the trees are from 200 to 800 years of age. There are twelve venerable trees whose age is incalculable, seven standing in one group, three more a little further on, and two on the northern edge of the grove; the largest tree is 63 feet in circumference. Learned travelers admit that the age of the oldest must be about 2,000 years. The Arabs have a traditional veneration for these grand old trees, and believe that an evil fate would surely overtake any one who would dare to lay sacrilegious hands upon the Saints, as they fondly call them. Every year at the feast of the transfiguration, the Maronites, Greeks and Armenians mount to the cedars and celebrate mass on a homely altar of stone at their feet. What inspiration, beauty and poetry must descend upon this group of worshipers, as they bow in the grand old shrine of their fathers, for

> "The groves were God's first temples.
> Father, thy hand
> Hath reared these venerable columns, thou
> Did'st weave this verdant roof. Thou did'st look down
> Upon the naked earth, and forthwith rose
> All these fair ranks of trees.
> Ah, why
> Should we, in the world's riper years, neglect
> God's ancient sanctuaries, and adore
> Only among the crowd, and under roofs
> That our frail hands have raised? Let me, at least,
> Here, in the shadow of this aged wood,
> Offer one hymn — thrice happy, if it find
> Acceptance in His ear."

Lotus — A species of water lily of great beauty, resembling in form our white water lily, but about three times larger. The color is generally pale blue, pink or red, the latter is fabled to be derived from the blood of Liva when Cupid wounded him with his love arrow. The lotus is regarded as sacred by the Hindoos and Egyptians, and was mystically connected with their mythology, and was everywhere worshipped. It was the rose of ancient Egypt, and the favorite flower of the country. Its representations

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entered largely into the works of art of the ancients. In the mythology of the Hindoos and Chinese, the deities are often represented as seated upon a throne of its shape, or in the expanded flower. Among the Chinese it is especially connected with Buddha, and symbolizes female beauty. The Egyptians consecrated this flower to the sun, their God of eloquence. The lotus eaters were first mentioned by Homer. The lotus seed or nut is about the size of an acorn, the seed vessel containing the nut is funnel shaped, about three inches across, and when the seed is ripe, it becomes a dry hard bed containing about a dozen hollows, with the large seeds half buried in them. The nut is delicious, with something of an almond flavor about it, but so delicious that all who eat of it become immediately intoxicated with pleasure, so much so that they forget their native lands, and have no desire to return to home and friends again, desiring rather to live where they can enjoy the nectar of the gods. A variety of lotus, the *Nelumbium luteum*, is a native of the United States, and is found as far north as McGregor, Iowa.

Date Palm. The Mohomedans endow with mystical virtues this beautiful tree. They believe that Mary the mother of Jesus went out of the city by night to a certain mountain, and retired aside near a palm tree, and just before Jesus was born into the world, in great anguish and sorrow of heart she exclaimed, "Would to God I had died before this, and become as a thing forgotten and lost in oblivion." A voice beneath the ground, supposed to have been Gabriel's, said to her, "Be not grieved, now hath God provided a rivulet under thee, and do thou shake the body of the palm tree, and it shall let fall ripe dates upon thee, ready gathered for thy refreshment, eat, drink, and calm thy mind." Accordingly, she had no sooner shaken it, than the dry trunk revived and shot forth green leaves and a head laden with ripe dates, although it was in winter.

The Man Eating Tree.— A very wonderful tree has been discovered in the island of Madagascar, and a description of it, published in a German magazine (*Graefe and Walthers*) of Carlsruhe, by its discover, Carl Leche, with notes upon it by Dr. Fredlowski. He says the Mkodos are a very primitive race, and dwell entirely in caves, and have no religion beyond that of awful reverence which they pay to the sacred tree, which he named the Crinoda. His companion and himself went in search of this wonderful tree to the bottom of the valley. A path diverging from the southern side, struck boldly for the heart of the forbidding and seemingly impenetrable forest. Suddenly all the natives began to cry "Tepe! Tepe!" (Look! Look!) The stream here wound slowly by, and in a bare spot in its bend was the most singular of trees. It was of dark brown color and appeared to be as hard as iron. The trunk of the tree was in shape like a pineapple denuded of its leaves, eight feet high and thick in proportion, resting upon its

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base. From the apex of the truncated cone (at least two feet in diameter) eight leaves hung sheer to the ground, like doors swinging back on hinges. These leaves, which were joined at the top of the tree, were eleven or twelve feet long, and shaped like those of the century plant, and were two feet through and three feet wide, tapering to a point like a cow's horn. The concave face was thickly set with very strong thorny hooks. These dark green leaves were hanging very limp and lifeless. The apex of the cone was a round, white, concave figure, like a smaller plate set within a larger, and there exuded into it a clear treacle, honey-sweet liquid, that possessed violent intoxicating and sporific properties. From underneath the rim, so to speak, of the undermost plate, a series of long, hairy, green tendrils seven or eight feet long, and tapering from four inches to a half inch in diameter, stretched in every direction towards the horizon as stiffly as iron rods. Above these (from between the upper and lower cups) six white, almost transparent palpi, or feelers, reared themselves toward the sky, twirling and twisting with incessant motion, but constantly reaching upward, with a subtle, silent throbbing against the air that made one shudder, as it suggested serpents dancing on their tails. The natives began shrieking around the tree in their shrill voices, chanting hymns to the vegetable monster, praying that their sins might be forgiven and blessings bestowed. With wild shrieks and chants, at the point of their javelins, they obliged one of the women to ascend the tree, which she did with slow and despairing step. She soon stood on the summit of the cone, the palpi twirling all around her. "Tish! Tish!" (drink! drink!) cried the men, and, stooping, she drank of the fluid in the cup, and soon after made an effort to jump down; but no! the demon tree came to sudden, and dreadful life! the delicate palpi quivered for a moment over her head, then fastened upon her in sudden coils, round and round her head and arms. The tendrils, one after another like great green serpents, rose, retracted, and wrapped her about in fold after fold, with the cruel swiftness and tenacity of an anaconda; the great leaves rose slowly and erected themselves in the air, and closed about the victim with the silent force of a hydraulic press; from the interstices there trickled down the stalk streams of fluid, mingling horribly with the blood of the victim. At sight of this the natives came yelling madly to the tree, and with cups, leaves, hands and tongues, got each one enough liquor to send him mad and frantic, which at last ended in delirium and insensibility. Afterwards he saw an active little lemur caught in the fatal coils. Leche at last obtained permission, through the intervention of his friend, to cut down one of the trees, but the natives would not witness the sacrilegious act. We will leave the learned botanist to explain the strange phenomenon, and to analyze the poisonous juices, and we will look for a little through the old Norse mists of past ages.

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It is said that we as a people are becoming too practical and prosaic, and that we are nourishing the tender minds of our children too early and extensively on mathematics and dry reasoning, instead of stimulating and beautifying their souls with some of "the mythological lore of our forefathers."

Let us turn to the beautiful story of the tree Yggdrasil, that tree that is said to bind heaven and hell together, the grandest and most sacred of all trees, and probably one of the finest conceptions of the human mind. The name Yggdrasil signifies bearer of God. It is an ash, whose branches spread over all the world, and reach above heaven, bearing green leaves that never wither, even defying the last fire that destroys the earth. From its leaves drops a honey dew, the sweetest of all blessings.

"Thence come the dew drops
That fall in the dales."

In the shade of the upper branches dwells in Asgard the Asa gods. Adusan, or Spring, sits in these boughs with her apples of rejuvenescence. Another branch or root reaches Midgard, the abode of men. The third, shooting into Hela, the kingdom of death. Under each branch or root springs a wonderful fountain, endowed with marvelous virtues. Three young women (Norne), by name Urd, Verdandi and Skuld (Past, Present and Future), sit by the warm Urdar fountain, and determine the fate of both gods and men. In this fountain swim the sun and moon, in the shape of two swans. By one of the roots murmers the fountain of Mimer, in Mistland the mother of the ocean and rivers of the earth. Many parasites attempt the destruction of this wonderful, tree, but each day the Nornes draw water and with it and the clay that lies around the spring sprinkle the tree, that its branches may not rot away; thus all mankind partakes of this universal tree.

Prof. Anderson says of it. "The peculiar feature of this myth is its comprehensiveness. There is one who has planted the tree, and there are many who watch and care for it, higher beings protect; Gods and men, all that possesses life and consciousness has its home in this tree. The picture is so grand that nothing but an infinite soul can comprehend it."

Some believe that the Christmas tree of modern Germany may be some kind of off-shoot of the old idea of Yggdrasil.

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LIGHTS AND SHADOWS AMONG MY HOUSE PLANTS.

MRS. C. D. ROBINSON, GREEN BAY.

That there is no royal road to learning is as true of the lilies of the field as of the stars in their courses. And yet there *is* a sight and an insight, a gift which renders this knowledge more or less easy to be acquired. But as gifts are for the very few, the majority of us must learn in that most expensive of all schools, experience. For our own consolation it is well to realize that patience and perseverance are more powerful to conquer "in the long run" than even gifts and insights. If a few facts learned, or a few episodes in my own experience can be of any possible help to any one, then they will not have occurred in vain or been learned for my own benefit alone.

For eleven successive years I kept house plants in the winter, and nine of those years, sooner or later during the season, they were frozen, root and branch, and every spring I would begin over again. I do not remember that I was one bit disheartened by my repeated defeats in my contests with King Frost. Every winter he would assail me in some new and unexpected manner, and my cherished plants would go down before him. So intense is my love for flowers, so great the necessity to my happiness to have them about me, I never dreamed of giving up, 'till King Frost and sickness assailed me at the same time, and I succumbed. I had no more tears to shed for dead plants and no more strength to wage war with the intense cold of northern Wisconsin. My conservatory was taken away and converted into a hennery, and for years after I would not go into a green-house in the winter, and always turned my eyes away when passing a conservatory filled with plants. I knew if I yielded one inch, my inborn passion would take possession of me, and I dreaded the unequal contest. But one winter a florist sent me some potted plants in bloom. I hesitated to accept them, but the bright, clear eyes of the Chinese Primrose looked up to mine, and from that moment till now I have again been their willing servant, and expect to be till I am too old to serve.

First of all, let us begin in May or June to prepare our plants for winter blooming. Start your slips in the same jars you wish them to remain in during the winter, being careful not to have them too large, for most plants do not throw out flower buds until the jar is well filled with roots and their growth in that direction checked somewhat. When well started, give plenty of air and sunshine and water; put them out of doors to grow strong and healthy; pinch off all flower-buds until late in August, then let the buds grow for house blooming. It is not worth while, as a rule, to bring into the house the plants that flowered all sum-

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mer, unless you have plenty of room, or can keep them in a cool cellar, where they can have some light. For my own part I feel guilty of a crime, but little short of murder, to leave perennials out of doors to die. I would rather crowd my plants and have fewer flowers than to leave them to an untimely death in the ground. But I am telling you ladies what it is *best* to do. Sometimes the very plants you are sure there is no room for, will give you the most pleasure. Last fall we had some Abutilons, which we did not care to bring in and we gave them away to half a dozen different persons, all of whom expressed the greatest pleasure and would be sure to come for them; but for some reason, not one of them did, and at the last moment they were taken up and brought in. They now are the most grateful plants in the conservatory; while some of the most petted plants are pouting and turning yellow, these Abutilons greet me with their fresh green leaves and every day hang forth their pretty bells, which ring out their music to gladden my heart. Is that fanciful? perhaps, and yet it seems to me that some of my plants welcome me when I go into the conservatory, as joyfully as my canaries call to me when they see me and will not be content 'till I have a good talk with them. I little sentiment in this work-a-day world will not hurt any of us. But now that we have our plants in doors, which must be by the last of August, before fires and closed doors and windows are necessary, in order to accustom them to the change gradually, the first great essential is fresh air. Without this all care is of no avail. Fresh, pure air they *must* have. If somewhere in the house a window can be opened, through which fresh air may enter, and before reaching the plants pass through and mingle with the heated air of the room where the plants are, all will be well. If from any cause this is impossible, then don't try to keep plants in the winter, for they will be only a disappointment to you. If the doors all over the house are kept open and outside doors opening frequently, fresh air may thus be provided; but *be sure*, fresh air, not directly blowing upon them, they *must have*.

It is safer to keep plants too dry than too wet. Geraniums particularly, require but very little water; and of all winter flowering plants, geraniums are the most satisfactory. So great a variety of foliage and flowers are now offered for sale, one might well be content with geraniums alone. Insects seldom trouble them, and though thriving better under proper management, they will bear neglect better than any winter flowering plant I know aught of. For hanging baskets, or jars on a bracket, the varieties of Tradescantia cannot fail to please. They will grow when the earth is seldom watered, or they will flourish in a bottle of water in a dimly lighted room. For this reason they are used so much to decorate picture frames; place the bottle of water behind the frame, the fresh green foliage adding a charm to the most ele-

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gantly furnished room or brightening the plainest. They like warmth, but will bear a good degree of cold. To do their very best, they want a rich soil, plenty of water, light and warmth. Then their bright green or gaily striped leaves will be a constant joy to you. For my own part, I can find no plant nor vine that is not craving for winter sunshine. They may grow, but the leaves are not a bright healthy green; so do not try to keep more plants than you have room for, or place where sometime during the day the sun will shine directly upon them. Two or three times each week, as you find a few leisure moments, take a steel fork and loosen the earth around the roots of every plant. It will prevent the soil from getting sour or baked.

As it grows colder, the fires are kindled, the doors and windows closed, and the air dry, the insects which infest house plants will begin to appear. After a few weeks you will find a flourishing colony of green fly, or red spider, white thrip, or the mealy bug, and perhaps that worst of all pests, the scale or bark louse, which clings so closely to the stem of the plant as to defy the sharpest eyes, till often times the life is nearly sucked out of the plant before the cause is discovered. At first, hand picking every day will serve to keep them within bounds, but after a little, so rapidly do they multiply, more wholesale slaughter is necessary to exterminate them. Now all florists and books upon floriculture say fumigate. I well remember one of the shadows among my plants — one of my peculiar episodes — I say *peculiar*, because one of my characteristics is a desire to do *thoroughly* whatever I undertake, so sometimes my "vaulting ambition o'er-leaps itself."

It was several years ago, before cold and sickness completely routed me. My conservatory seems now as I look back to it one jumble of plants. I had heaths and japonicas, fuchsias and pitcher plants, geraniums by the score, azalias and roses, carnations and cacti, everything anyone offered to give me or I had the money to buy, 'till over 200 plants graced the shelves of my conservatory. It was quite early in the winter, and every plant looked flourishing, 'till an industrious tribe of insects took possession of them. I waged a most unequal contest. Soap suds they laughed at, carbolic acid they grew fat upon, alcohol they winced at a little, and even kerosene oil only startled them, and injured them much less than it did the plants it touched. I was at my wits end. In my despair I turned to the professional florist. Mr. Vick, whom you all know to be a careful, honest and conscientious man, told me to *fumigate!* Orange Judd, of the American Agriculturist, whose papers were my "*vade mecum*" in those days, even Orange Judd said *fumigate!* Mr. Saunders, of Chicago, with whom my pleasant epistolary friendship had extended over many years, wrote me to *fumigate!* Every book, every paper, every florist east and west told me to fumigate, and I *did* fumigate! I attended to it all myself, as I would not trust my pre-

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cious plants in less loving hands. I put the pan of hot coals in the cellar or lower part of the conservatory, scattered the flour of sulphur upon them from above, beat a hasty retreat, closed tightly the door, and sat down with a book, impatiently awaiting the appointed time. But I could not fix my mind upon its pages. Visions of happiness danced through my mind, and I inwardly chuckled at my anticipated conquest. After the proper time elapsed, and "the smoke of the battle had passed away," I entered to take undisputed possession of my plants and bury the dead insects. Alas! if the sirocco of the desert had blown over my plants the effect could not have been more disastrous! Every leaf, every flower, every bud, hung from their stems withered and blasted! A smell like decaying cabbage leaves assailed my nostrils; and there, even upon the dead leaves, were the bugs as lively as ever! The thrip tripped as lightly, the green fly flew as gaily, the mealy bug lazily crept over the ruins; the red spider looked more brilliant, and even the scale, that slowest of all these torments, moved with added vigor. And my poor plants! To have their foliage dead and the bugs so thriving, was as aggravating to me as it must have been to the old Romans, to have Nero fiddling while Rome was burning! That was the first and the last of my fumigating. I got my scissors and proceeded to cut off the dead leaves; the remains of that experiment filled a bushel basket. Of course the leaves came out again, and in two months they were beautiful; but think of the chagrin of those two months!

I will tell you what I do now. After the insects become too thick for hand picking, get coarse tobacco (the refuse of a tobacco shop is the best) and steep it in enough water to thoroughly cover it. Take a large tub, put in as many plants as it will hold, fill your watering pot with the tobacco water, diluted till it is the color of strong black tea, having it hotter than you can bear your hand in for any length of time, and thoroughly wet every leaf and the earth in the jars. Let them stand in the hot water till you have washed the saucers and carefully wiped the glass and woodwork around the shelves and the shelves also; and then sprinkle with clean warm water, remove from the tub and place where they belong. Empty the water out of the tub into the kettle where the tobacco is steeping and so go on with every plant. Does that seem a great deal of trouble? It is work, I admit, but not trouble. Nothing is accomplished in this world without work but it depends upon our own selves whether it be *trouble* or not. The hot tobacco water will kill and drive away every kind of insect I ever yet saw on house plants. Standing in the hot water thoroughly wets and warms the earth and the leaves will soon grow to a glossy, dark green, like they are out of doors in the summer. I don't know as the tobacco is a fertilizer, but the plants will thrive wondrously, and all destructive worms in the earth are destroyed. After they are all in their places I shower

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them with warm water, in which I put liquid ammonia, a tablespoonful to a pail of water.

If I should talk for hours and tell of my doings, undoings and over-doings, they could all be summed up in a few practical negatives, viz.: don't crowd your plants, don't keep too wet and *don't fumigate!* Or a few as practical positives: give plenty of fresh air and light and sunshine; keep clean and cool, and your house plants will be a joy to you and to every one who sees them. The time devoted to their care will be a pleasant recreation, lifting your thoughts and mind above the everyday cares and annoyances. They will rejoice with you in your happiness; or, if sick and unhappy, they will strive with their pleasant foliage and bright flowers, to make you forget your sorrow. They will adorn your bridals and take away the gloom from the grave. If the Persian poet said, in vindication of his character as a true poet, "I love the flowers," we can accept that love as a token of refinement.

"Blessed be God for flowers!
For the bright, gentle, holy thoughts that breathe
From out their odorous beauty like a wreath of sunshine on life's hours."

Ye speak of Hope and Love,
Bright as your hues and vague as your perfume;
Of changeful, fragile thoughts that brightly move
Men's hearts amidst their gloom.

Ye speak of human life,
Its mystery — the beautiful and brief;
Its sudden fading midst the tempest strife
Even as a delicate leaf.

And more than all ye speak
Of might and power, of mercy; of the One
Eternal who hath strewed you fair and meek
To glisten in the sun.

To gladden all the earth
With bright and bounteous emblems of His grace
That showers its gifts of uncomputed worth
In every clime and place."

ORNAMENTAL FOLIAGE BEDS.

MRS. IRENE H. WILLIAMS, MADISON.

It is said fashion more or less rules us all, from the cradle to the grave. Just now the tryant dame smiles approvingly on the more artistic arrangement of our flower gardens, and has set her seal of approbation on beds of foliage plants. In all the large parks

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throughout the United States much attention has of late been given to the culture of these beds of color. By skillful care and management, wonderfully beautiful effects have been created; looking on such, there is often a more thrilling sensation of enjoyment produced by these creations of man's skill, than by the grander effects of nature, existing constantly before our eyes. Truly they who oppose or look upon any thing as trivial, which tends to refine and elevate the nature of mankind, by binding them down to the thoughts of the work-world alone, cheat life of half its beauty.

The display of foliage plants about the grounds of the Horticultural Hall during the Centennial, was so universally pleasing that each beholder possessing sufficient ground not covered by bricks and mortar, then and there vowed to be the possessor of similar beds another season. The demand for these plants has become so great that every year brings many new varieties to our shores from England, France and Japan, to gratify the desires caused by the rapidly growing, cultivated taste of our people.

In the former countries they have been grown many years for lawn decoration, while to us they seem to be only frail hot-house plants. The humid atmosphere that envelopes England, makes the growth of the Coleus there a perfect success. Even though we have a dry, hot temperature to combat against, man's skill has triumphed over nature, and we too can have them in all their tropical beauty. The varieties mostly used for such purposes are the many hued, velvet Coleus, rivaling the tints on the painter's pallette; Achyranthus, and of the white leaf varieties, Centaurea Cineraria, Gnaphalium Artemesia, etc., from the pure white, ferny leaf, light and feathery, to the heavy and marble like. To grow these successfully, care should be given to the selection of the location, the preparation of the soil, and the form of the bed. Coleus will do best in a position where they can be sheltered from the noon-tide sun, as it would soon fade out their beautiful shades. The soil should be dug deeply, and be of the same kind that is suitable for roses. Unless showers are frequent, water, not a mere sprinkle, but generously, every night. The most effective beds are those cut in the lawn, where the colors stand out in bold relief against the green sod, but of course the grass should be kept very short or the effect will be lost. The next necessity will be the frequent, not pinching but cutting off the tops, to create a thick, close growth, and uniformity of height. If not so treated your foliage bed will soon cease to be a thing of beauty. This will apply equally well to the Achyranthus and the white leaved plants. One might have a bed of Coleus, where blooming plants would never put forth a flower, for they can be grown in the shade and the gratification of it would be almost as great as one filled with blossoms. I saw in a lawn, on Euclid avenue, Cleveland, Ohio, a bed composed entirely of the darkest red Coleus, known as

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Verschafetti, another not close enough to detract from it, of white leaves, grown as I have described, and they were truly beautiful. For a display of tropical looking plants, there are a number easy of culture, and quite inexpensive, as many may be raised from seed, and those of bulbous nature can be preserved from year to year. Seeds of Ricinus and Japanese maize should be sown in the house in April, or they would not in this climate arrive at maturity before the frost would claim them for his own. Canna, or shot plant, can also be raised from seed. They require to be soaked in hot water before sowing, which should be done in March, then, if you have faith, and a large stock of patience, you will have plants of some size by fall, which will make noble sized ones for another year. In arranging a bed of this kind, if a circular form is wished, use the Ricinus, better known as castor bean, for the center; if a semicircular one, as a background, then alternate with Japanese maize and Canna; of the latter, some of the new varieties are strikingly variegated, around that might be planted gladiolas, then finish off with Coleus, Achyranthus Euphorbia variegata, or the almost forgotten, neglected Amaranthus family. The Euphorbia is a pretty annual and a good plant for such purposes. The leaf is green, margined with white, and much more to be relied on than our well known Mt. of Snow geranium, which it somewhat resembles. There is also a seedling plant called Perilla, quite easy of culture, with foliage varying from green and white to dark red. Another good plant named Brassella Rubra, or variegated Maderia vine, is of shrubby growth, thick fleshy leaves, green margined with white and a faint pink edge. It revels in heat, drought and even neglect, seemingly indifferent to its condition, therefore quite a treasure.

The Amaranthus, some few generations since, was considered the very height of the beautiful, but plants, like other things, have their day, and then pass into oblivion. Again their day has come; Jacob's Coat and the gaudy Cockscomb will no longer be banished to some out-of-the-way country garden, there tended only by the hands of the old, because of the memories they bring of those and days long gone. They have returned to us wonderfully improved; many of the new ones are really quite worthy of cultivation, contrasting very favorably with their more petted rivals, the Coleus. The Amaranthus are raised from seed only; should be sown in February, as they germinate slowly, require heat and but little moisture until they become good sized plants. It is best not to plant out in the garden before the third week of May, for while young, though many in appearance are coarse looking, by nature they are tender and sensitive, quite unfitted for battling with chilling or adverse winds. At Forest Home, Milwaukee, they have for several seasons been quite extensively used, and greatly admired. From the leading magazines of horticulture, I learn that Japan is furnishing us with numerous plants and shrubs

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of variegated foliage, many of which are quite hardy; some may even withstand our own rigorous climate, and when to that is added the double attraction of being ever green, it seems we may in a measure invade king winter's territory, softening and cheering where else the sublimity of death and desolation reign, even though produced by "nothing but leaves."

OUR HOMES.

MRS. MARY L. ARNOLD, GALESVILLE.

When we were young and rich in the freshness and ardor of youth, we saw a haven, far out in the future, and there our castle. We buffit the billows, we sing through the storm, for Hope, glad and bright, is leading us on. What is it that all of earth's glad and weary ones are seeking but a home? I know it is the one grand thought of every true girl's soul, her greatest incentive to study works of science and art, to toil untiringly through months and years, that at last she find rest in a home, and there reign queen. And every noble boy has a picture that he carefully keeps in the folds of his heart, the only object worth laboring to obtain, a home and its surroundings; he bends to the oar and manfully presses forward and onward. Happy indeed are those who in a measure have reached their ideal. It is well to aim high, have glorious aspirations for all that is good, true, manly and noble; but whether our homes should be beautiful, a place where there is none like it, to our loved ones, depends so entirely upon ourselves that it seems almost impossible, after such bright hopes, such working and planning to obtain it, that so many fall far short of the realization. How necessary that we make our home what it should be; one that our children may love and seek.

"A helm is a little thing but it governs the course of the ship." The father may be the head, may be the strong right arm that all else may lean upon, but to the mother is the power given to guide, direct and counsel. 'Tis a beautiful saying, "The mother in her office holds the key of the soul, and it is she who stamps the coin of character." Then how great her influence. To have a healthy, loving, happy influence, we must have refinement in our homes, and true refinement finds it source in that life giving principle which gives character to every grace: *Love*. Early associations of refinement make an impress upon childhood that will always be manifest. That upon our shoulders, as mothers, rests such a responsibility, should at once make us tremble and rejoice. What a comfort for children to grow up and not only love their mother

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for the love that bore them, but reverence and respect her for the intelligence and love she brought in their own dear home.

Pitiful indeed is the family with a mother that cannot command the love and respect of her children. Men with intelligent, refined mothers, sisters and wives, breathe a different atmosphere as it were, from those who have not, and cannot always be forgetful of their virtues when mingling with others. It is not hers to don equipments of war and take her place on battle fields, nor to contend with men in legislative halls, yet what a power is her influence to those who represent her there, for good or evil.

Cultivation and thought will manifest itself always, either in its possessor or the thing possessed, generally in both. The lady of thought and refinement manifests characteristics that never accompany the coarse and vulgar; we need not go into her home to see whether she has good books to read; or enquire of her whether she has read them. We shall not be forced to examine her conservatory to learn whether she has the refinement that always accompanies the true lover of flowers. We look in her face, and there read as in a mirror, what she is. In every word expressed she either praises or betrays herself. We are not deceived. Nature has endowed each with the faculty of reading leading characteristics in our fellows, and although we may not often read the present thoughts, we can the ruling passion. We cannot even deceive ourselves. There is a consciousness of mental strength or a consciousness of the lack of it that ever remains with us, and exists within each individual the same. We need not ask another. We may "see ourselves as others see us." So cultivation will manifest itself in whatever hands touch or minds teach. If this cultivation and refinement is so observable, renders the possessor and those with whom they mingle so much more attractive and enjoyable, I most earnestly wish that none of our farmer friends would ever withhold from their families, the papers, the books, the means to get the many little, though comparatively inexpensive things, that nimble fingers can so readily shape into things of beauty, that add much to the attractions of their homes. There is so much written on the subject of home decoration, that if we have not natural tact, we can get hints that will materially help us. The agricultural papers have taught many a housewife ways of economy, and have trained her daughters to love the "beautiful and the true."

Please do not ever say those little niceties, those birds, those plants, those little, shining goldfish are not worth the time and trouble bestowed. You cannot place a value of dollars and cents upon them for the good they will do. Remove them from your homes, set your chairs back mathematically straight, you will feel like drawing down your face to correspond with the straight-jacket appearance of things, then tell us, do you prefer a home without them? That there are men engaged in farming who

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ought not to be, we know; that there are women who marry farmers who ought never to have done so, we know also. I believe you will agree with me in saying, that there is no occupation where the wife works with the husband as much as in that of farming, and in no occupation is it more necessary that she should. If she is not in sympathy with him, and is pulling the other way, as it were, success, financially, will rarely ever crown their labors, Intelligence is so necessary to success; success in every vocation so necessary to happiness We may be fortunate blunderers for a time, but thorough study and faithful practice is what will bring the lasting reward. Those who admire the beautiful, will not be lost to the things of beauty without. The beautiful flowers should bloom around our doors, and little hands be taught to cultivate them, and little hearts, to love them. We can cast our eyes about us and observe the beauties of nature everywhere. Heaven bends above, and is mirrored beneath us, and dull and thankless would we be, could we not "look through nature up to nature's God," and say, we bless Thy great and holy name. As wives and mothers, keepers of our homes, there is much for our hands to do. The physical wants of our family are to receive thorough attention. As we look about us, we find too many weary housewives, who have attended merely to that, to the neglect of all else. The first harvest alone receives their attention. The second, when it is garnered, will not afford the pleasure that it ought. "For as ye have sown, that shall ye also reap." It is not without heartache that any ever pass into complete nonenity, and feel that the dreams of their girlhood are not to be realized. They had hoped to have situated themselves so that they could improve with the times socially and intellectually. Yet, with cares gathering around us, we have taught ourselves to think that only our own hand can do what there is to be done, and, by so doing, imprison ourselves within our own home. There is a culture and ease of manner that comes from mingling with others, and that can be acquired in no other way. Our friends and society have claims upon us, and we can but feel that we are appreciated according to our usefulness.

When old age overtakes the uncultivated, uneducated, time hangs heavily; not so had his mental powers been cultivated. The age of a cultivated man is often more complacent than the youth, while they who in youth have made no provision for age, are like an "unsheltered tree, stipped of its leaves and its branches, shaking and withering before the cold blasts of winter."

Have a cheerful, happy face, speak only pleasant words. This happiness and pleasantness is catching; the whole family get it, and what is better, they generally keep it. Did you ever notice what a change it will make in a happy social circle, by the presence of one sour, dwarfed, jealous or selfish individual? And how quick will we catch the inspiration when one of those whole

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souled, jolly ones comes in, that know the art of pleasing and making themselves agreeable. The little folks echo their parents' sentiments; they are not slow to catch them either; imitate our actions so closely that it bids us be cautious. Provide well for their entertainment. Keep from your home all that is pernicious in itself, but indulge in all else under a wholesome restraint. Don't forget in ordering your papers to get some suitable to their tastes; get books for them that they will enjoy; provide games liberally. For their sakes, read their childish stories, play their innocent games occasionally with them. It will not hurt you to live over your childhood days by so doing. Remember always, "that little things are great to little folks."

With what watchfulness we should guard them. Their first breath brings with it great care for their parents; nor does this cease; months lengthen into years; years come and go; our boys are gone, grown to be men and women, taking our places. We stand aside, anxiously watching their movements. Their successes bring us pleasure; misfortunes, such pain. There is a glorious "hope beyond," where we have done our duty, and with all earnestness and love, guided these baby minds through boyhood and girlhood up to noble young manhood and womanhood, with principles born of heaven. And what may we not expect for humanity that is elevating, refining and purifying, when the youth of our land rise up strong, courageous, generous and free.

"Where, then, is woman's sphere? The sweet
And quiet precincts of her house:
Home where the blest affections meet,
Where strife and hatred may not come,
Home! of her earliest hopes the shrine
Around which all her heart strings twine.
There loved and loving, safe from fear,
Lies ever woman's noblest sphere,
To bless in every stage of life,
As mother, daughter, sister, wife."

ECONOMIC VALUE OF SEEDS IN CULTIVATION OF PLANTS.

MRS. D. C. AYRES, GREEN BAY.

There are few subjects more worthy of our consideration than the economy possible to be practiced in the gratification of our tastes for the refined and beautiful; and this for the simple reason that there are many who, for the want of such economy, are forced to starve their innate love for flowers in the midst of plenty; to see a favored few enjoying what a benificent father intended for all, whose natures have so far retained their original

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purity as to be able to appreciate his gifts. To-day I would give a few hints, gathered from a long experience, to show that with economy of money, if not of time and labor, all may enjoy the luxury of plants, both foliage and flower, now supposed by many to belong exclusively to those able to pay for them.

That it is a pleasure thoroughly to be enjoyed and to be truly grateful for, when we may reap for ourselves a harvest of beauty, fragrance and grace, from the labor of others, I will not deny. It is very delightful to go into a greenhouse and select therefrom, with taste and appreciation, the gathered floral treasures of every clime; and it is well that there are those who may do so, rewarding from well-filled purses the efforts of the florist, who adds so much to the artistic beauty of their homes. While plants are, as we all know, an expensive luxury, if we indulge our desire for them, seeds are to be purchased at a trifling expense, and the whole growth from the tiny leaflet, appearing just as we are giving them up, to the vigorous plant and perfect flower, is a perpetual source of interest and delight. There is a sort of loving pride, a self conscious ownership in plants which we have watched from the time when we dropped the little seeds into the well-prepared earth, and we almost forget that sun and soil, air and water have had any part in bringing this hidden beauty to light. In May most of us regularly plant in our flower beds, mignonette, petunias, phlox drummondii, pinks, and a host of other annuals too innumerable to mention; and in our northwestern climate, with its long winters, tardy springs and short summers, the complaint is invariable made, it is so long to wait for flowers, but with a little forethought and considerable care we may fill our gardens with plants ready to bloom in June, leaving no interval between the bulbs of May and the annuals of July. Many kinds considered strictly house plants, and carefully stored away in the summer to rest, retaining around the roots earth exhausted by the winter's efforts, and kept from light and moisture, would be very grateful for the privilege of rooting a while in the fresh earth, and will furnish enough young vigorous plants to be potted in August to make up for their own loss if, after blooming all summer, they are abandoned to the mercies of frost.

Many flowers which bloom in our gardens will do equally well in our parlors, bringing brilliance and cheerfulness to the dullest room. Salvia, which has the most gorgeous coloring of any plant raised from seed, may easily be cultivated. Plant the seeds in June. Select strong, healthy plants, and pot in small pots in August. The first of October remove to pots two sizes larger, and they will bloom soon, continuing through the winter. Transplanted to the flower-bed in June, and well cut back, they will last all summer. Carnations, ageratum, heliotrope and many others will do equally well. Petunias, selected as soon as they have bloomed, that you may choose the finest varieties, potted in small

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pots, and not allowed to show any flowers until the first of November, will fill a window with brightness, and require very little care. The graceful blue Lobelia is a great favorite with many, and is generally purchased at a florists. It is very easy to have a large number of plants from seed, always remembering that these fine seed must never be drowned with water or choked with earth. The soil, with one-third at least of sand, should be sifted, and the seed sprinkled on it while damp, slightly pressed down, and a little more earth lightly sifted over. The young plants may be treated the same as the salvia, with the difference that salvia requires half shade, and pinching back constantly to keep it from blooming until winter. Treated in this way, you may have it in all its varieties, fringing hanging baskets, rustic stands, falling from brackets, always fresh, graceful and pretty; ten cents paying for a paper of mixed seed, which will give every variety.

Geraniums raised from seed are very fine; by carefully watching them while in bloom, cutting off all but the finest clusters before they begin to fade, and gathering the seed just as it is ready to blow away (it is well to tie a bag over it), you may have the satisfaction of raising plants which will be as fine or finer than those you buy; and if you have room for a large bed of them you may have it for a little trouble and no expense. They may be sown in the open ground the first of July, potted by the middle of September, keep through the winter in a cool room or cellar, where they may retain their leaves but not grow, and then they may be placed in the garden the first of June, and will keep a succession of bloom through the summer. The favorite pansy may be raised from seed with very gratifying results; for if slightly covered they will live in the garden all winter, and in the spring their bright, little, saucy, laughing faces, each with a different expression, will thank us for our care. It is a good arrangement to plant the seed about the first of August in verbena beds. Then they will be ready to bloom there the next spring, and by the time the verbenas are ready for blooming, their finest flowering season is over, and the plants may be taken up. Verbenas may also be raised from seed. My way is to plant in the open ground, but with a glass over to protect from chilling at night.

There are many seeds adapted to bedding purposes. The different varieties of coleus and amaranthus can be cultivated easily, transplanted, and arranged so as to make a fine show. A bed with a few plants of "amaranthus salicifolia" in the centre, euphœbia marginata next, amaranthus bicolor between that, and an edging of white candy tuft or lobelia, would, in August, be a radiant sight, and the seeds would cost just twenty-five cents for the whole. Some of the vines which seem expensive may be had for a mere trifle. The maurandya, with its delicate leaves and wealth of flowers, may be as easily cultivated as morning glories. For stands, hanging baskets and vases it is unequalled, and its

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hardiness makes it invaluable for the house. A few plants kept through the winter will cover porches, trellis or fence in the ensuing summer with great rapidity. Cobea Scandens and the tropæolum, especially the popular canary flower, are well worth planting.

What is more delightful than to fill our rooms with plants and flowers? They seem to welcome our visitors and brighten their reception. Perhaps you say, "but flowers require so much heat, the rooms where they are must be kept so warm, that it is a care and trouble." And this is true of some varieties. If a fine show of begonias is desired, they must have an even heat, not over sixty-five at night or less than seventy by day, and you cannot convince them to the contrary; but roses, fuschias, geraniums, petunias, lobelias, mignonettes, German ivy and maurandya will live in good condition and bloom too, where the mercury never rises over sixty, except by the heat of the sun. One of the great troubles in keeping flowers through the winter is, that as soon as the parlor stove is in place, the plants are put in place too. Water they get, and sun, but not the fresh, cool air, which is just what they want. They bloom awhile, their leaves turn yellow, they are roasted brown; and to mend matters the fire is kept a little hotter, and they get roasted a little more. Our seedlings must not be treated thus. Give them water, not only at the roots but on the leaves. Shower them at least every other day; the leaves drink the water as they would dew. It keeps them fresh, and they do not draw so hard on the roots. When the sun shines on them, give them at the same time, if possible, air. Do not let them crowd each other. Plants desire an individual life. Their almost animate natures will not amalgamate readily. One or the other must suffer through the crowding process. If placed in a stand, each plant should be potted separately. The pots may be placed in position and the interstices filled with earth, which can receive other seedlings.

Perhaps it will be said: "many of these flowers we may as well propagate from slips, and be saved much of the trouble, and it would be no more expensive." A genuine lover of flowers and the cultivation of them, will not object to the trouble, and no others will take it. The process of raising from the seed is necessarily slow, perhaps tedious, to one who does not find a new pleasure in each opening leaf; but there is a variety in it which the mere buying of a plant, however fine it may be, must lack. In propagating from slips you simply reproduce, and have no right to look for anything new or especially interesting. In planting seeds, you have a never-failing source of pleasure in watching for the flowers, there being always a chance of finding some new variety. If we care not for this, of course there would be little object in planting from seeds. It is far preferable to purchase fine varieties from our most reliable florists, who will furnish

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none but the best. From these seeds, at ten, twenty-five, or even fifty cents a paper, you may have dozens of plants which would cost at least twenty-five cents; many of them double that price. And in the cultivation of them, I feel sure, many would find pleasure, profit and economy.

HORTICULTURAL PROGRESS.

GEO. P. PEFFER, PEWAUKEE.

As we meet here year after year to relate our industrial experience, and take counsel on the general interest of horticulture in our state, it is a very pertinent question for us to consider, "Do we make any progress." If we base our judgment on the length of the lists of fruit recommended by the early Fruit Growers' Association and our own list, or on the number of varieties exhibited at the fairs then and now, and even in the membership of the societies, we must admit that the advantage is with them. At the winter meeting of the Association, held December 15th, 1855, the list of apples recommended for general cultivation was as follows: Northern Spy, Vandervere, Esopus Spitzenburg, Red Canada, Rhode Island Greening, Yellow Bellflower, Perry Russet, English Golden Russet, English Russet, Swaar, Baldwin; for further trial, Herefordshire, Pearmain, Jonathan, Talman Sweet, Rawles Janet, Fameuse, Rambo, Belmont, Bailey Sweet, White Winter Pearmain, Ribston Pippin, Fall Wine, Westfield Seek no Further, twenty-three varieties; and also the following as worthy of cultivation in some localities. Dominie, Red Romanite, Canfield's Sweet, Broadwell Sweet, Green Sweet, Limber Twig, Peck's Pleasant, Newtown Pippin, Roxbury Russet, Sweet Pear, Autumn Swaar, Autumn Strawberry, Dyer, Fall Pippin, Early Harvest, Summer Rose, American Summer Pearmain, Early Strawberry, Red Astrachan, Sweet June, Summer Queen, William's Favorite, twenty-two varieties.

Of pears, they recommended five varieties, the Bartlett, Flemish Beauty, White Doyenne, Belle Lucrative, Louise Bonne de Jersey. Sixteen other varieties were considered, but not recommended. Of plums, they recommended Washington, Imperial Gage, Smiths Orleans, Lombard, Red Gage, McLaughlin, Coe's Golden Top, Yellow Egg, Green Gage and Columbia. On the other hand, we have no pears or plums to recommend, and only fourteen varieties of apples, and but three of these are found in their early list, Westfield Seek-no-further, Talman Sweet and Fameuse. The Red Astrachan mentioned in their second list, we have placed in the first. Looking at the exhibitions of fruit in 1852, we find that

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F. K. Phenix exhibited forty named varieties of apples; Mr. Bell forty-six varieties; in 1853, Mr. Bell exhibited eighty-two varieties; in 1855, J. Starin had sixty varieties on exhibition, and Mr. Brayton, sixty-one. Of all these varieties, we find but very few that are now on our lists. Our Tetofsky, Duchess of Oldenburg, Haas, Plumb's Cider, Walbridge, Utter, Ben Davis, and Pewaukee are not mentioned in their lists, and were but little known, if at all. I would here state that the Walbridge I recognize as then given under the name of Redling, and Royal Pearmain, and that this last fall I found it in Ohio and eastern Pennsylvania under the name of Western Redling; but it was not on exhibition with the fruits at Baltimore.

Why this difference? Did the fruit growers of twenty years ago know more of the capabilities of the northwest for fruit-raising than those of to-day? A few of their members are yet with us, and they can testify that these twenty-two years of experience have fully demonstrated that but few of the varieties known then are suitable for general cultivation. Many of them will thrive in certain localities and under certain conditions now, perhaps as well as then, but having been tried under different conditions from those in which they were first judged by, they have been found wanting. If we are not gaining in the number of varieties, we surely are in respect to hardiness of tree and quality of fruit; for our experience has clearly proved that in these respect, the fourteen varieties now recommended are much more profitable and are adapted to a much larger territory, and will succeed under a greater variety of conditions than all the others recommended by the early fruit-growers. We are certainly making progress in adapting ourselves to our conditions, and developing that hardiness of growth which will endure the sudden changes and great extremes of our climate.

ADVICE ON FRUIT-GROWING TO THE FARMERS OF THE NORTHWEST.

A. J. PHILIPS, WEST SALEM.

After seeing the title of my paper to be read before the society printed in the programme, notwithstanding I made choice of that subject myself, I felt that it was assuming too much for me to undertake to give advice to persons much older in the business of fruit growing and other branches of farming than myself, and desired to change my subject to one that would be of more interest to the society than the old and oft-repeated stories of fruit growing, already worn threadbare; and when I saw the subject chosen by my friend Kellogg, I concluded that one of the principal

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things that in all probabliity he was repenting of not having done was, on looking over the orchards in the state, and at the countenances of the planters who had set many trees, that he had not warned men in more earnest and thrilling accents of the uncertainty attending the planting of apple and pear trees in a pecuniary point of view, and of causes that would cover to a great extent the subject of my paper. But I was advised to stick to the text, as it had been announced, and hastily prepared what I have to say on this subject.

The northwest takes in quite a scope of country, and if, perchance, this should fall into the hands of farmers in our sister state, Minnesota, there may be advice in it that will not come amiss to them.

First — I advise every farmer, be he farming on a large or small scale, to make an effort to raise some fruit as a source of pleasure and profit to himself and family. If you have no room to spare in any other place, plant fruit trees in the yards around your dwellings.

Second — I advise you to post yourselves on the most hardy varieties; that is, varieties that are succeeding best in the climate where you live. Then post yourselves on the best modes of cultivation. After this buy your trees, pay for them, and then use your utmost endeavors to care for and protect them.

Third — I advise you, if your land is the black, rich and fertile prairie soil that abounds in the northwest, not to think for a moment of trying to raise apples or any other fruit as one of the principal crops of the farm, for if you do, you will without doubt be disappointed and dissatisfied with the result.

Fourth — I would advise those who are located on suitable soils that are well elevated, so that drainage will be possible, and are well filled or underlaid with limestone; soils that are compact enough to retain sufficient moisture to protect the roots from freezing to death, to set quite extensively of fruit trees as a source of profit; and then, unless you are thoroughly posted, to start with, as to varieties, and unless you deal directly with reliable nurserymen, you will see many times that failure and discouragement will stare you in the face, especially if you have invested much money or spent much time planting Golden Russet, Rawles Janet, Jonathan, Ben Davis, Tallman Sweet and Walbridge apple trees, Flemish Beauty pears or Miner plums.

Fifth — I advise you who come under the class mentioned in the third heading, to buy and set but few trees; to be careful of whom you buy, as, if you have to depend on the judgment of others to make your selections, you will find that the men who can be fully relied on are scarce; for the reason, if a man is interested in a nursery, he is always anxious to sell, and may take too many chances on recommending a new variety to get pay for labor and time spent on it; and if a man is selling on commis-

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sion, he wants to make as many and large sales as possible, and often says many things and sells many trees that in the end prove a damage and detriment to his employers and produce dissatisfaction and displeasure among their customers.

Sixth — As I say under the second heading, if any one contemplates setting trees I advise them to post themselves, or apply to some one in their locality who is posted, before they buy. Last fall while in Minnesota I met a man selling fruit trees, and notwithstanding the fact that the Minnesota fruit-growers who are posted, and the State Horticultural Society have repeatedly recommended nothing for general cultivation but the Duchess and Wealthy of standard apples, and a few of the best crabs, still that man had orders for Perry and Golden Russet, Utter, Plumbs Cider, and several other trees that he knew would not be successful in that rigorous climate. I solemnly looked him in the face and said: "My friend, you must have a fearful amount of cheek to sell these trees to farmers." "Well," he said, "I have the trees, and the only way to get out is to sell them. I think they will do well."

Seventh — I advise farmers and others who contemplate planting apple trees, to make careful examination of the soil and location where they find trees that look healthy. Those that grow most thrifty seem to be the longest lived, and also to bear fruit the most plentifully. Then if the soil where you want to plant the trees is not like the soil just spoken of, go to work before and after planting and make it as near like it as you can, supplying those ingredients which you find lacking. This, if you plant only a few trees, can be done at a small expense. If your soil is light and porous, put in some clay; if lime or other stone is lacking, draw in some; supply lime, ashes, or any material you conclude is needed. I also advise you, whether you plant many or few trees, whether your varieties are good or poor, whether your soil is fit or unfit, whether your location is favorable or unfavorable, whether you bought the trees because you had faith that you could raise apples or to get rid of the agent, whenever you plant trees don't forget to mulch with some good material the first season, and every season thereafter, during the lifetime of those trees. They will be more certain to live and grow and to bear fruit, and you will be better satisfied with the result.

Eighth — I advise you as before to be very particular after taking all this pains, to get the best and hardiest varieties, and after you have planted as above stated, then see to it that cattle and horses are not turned in to destroy them. This is practiced too much, and then the failure charged to climate and other causes.

Ninth — I advise you to set young trees; two, and not to exceed three years old, for they will root more readily, grow more thrifty and bear earlier than older trees. Much has been lost, and many have become discouraged by setting four, five and even six

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year old trees, for they never recovered from the shock received by transplanting. I have abundant evidence of this in my own orchard, and know whereof I write.

Tenth — I advise, after you go to work and do as I have stated, prepared your ground, etc., to persevere; don't be discouraged. If a tree happens to die get another, and try and get a better one to take its place. Pigs sometimes die, calves, colts, chickens and turkeys die; still we do not give up stock raising on that account. So I advise you not to give up apple growing, but fill the vacant places with other trees as fast as one fails and keep on doing so as long as God gives you health and strength, and your own or some other man's posterity will have reason to bless you.

Eleventh — I advise all who design setting or planting to avoid cheap trees; that is, trees offered to you at a price less than they can be raised; for several reasons: 1st. They are likely to be poor, unsaleable stock; and 2d: If you get them for a mere nothing you will not take near as good care of them. High-priced horses, cattle and hogs always get the best care. A farmer in my town last fall asked me what I thought of a trade he had made; he said he had traded an old fanning mill that he had several times tried to give away, for fifty apple trees. He did not know what varieties, but after letting them stand out doors for one cold night he had buried them for spring planting. I answered him: "You have made a trade that will be a damage to you and an injury to the man who sold you the trees, for with the careless treatment they have already received, no doubt many of them are dead, and as they cost a mere nothing you will not take any care of them, and they will die with neglect. He said: "I guess you are right."

Twelfth — I advise you to buy of a man who has some practical knowledge of varieties, soils and location. If he does not possess that, let him go and acquire it before he attempts to sell trees, for if he possesses that knowledge he can readily impart the same to you. Buy of a man who has established a reputation for fair dealing; if he does not possess it, tell him to establish it before he sells. That course would decrease the quantity and improve the quality of this class of middlemen. But don understand me to advise you to turn a cold shoulder to the tree peddler whenever he calls on you; by no means. Take him in, entertain him, find out what he knows, and if he fills the bill and you consider him a safe man, why trade with him; for you may rest assured that he is driven to his last extremity when, in this latitude, after all that has been said, he starts ou to sell apple trees.

Thirteenth — I advise you to subscribe for a good paper that devotes part of its columns to imparting horticultural knowledge, and read it carefully, and when in your opinion you discover any thing of interest for others, write it for their benefit. Also pay one dollar every year to be a member of the State Horticul-

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tural Society; this will encourage and help the society make greater efforts in disseminating suitable information to the public; you will then be entitled each year to a copy of the transactions, which contain valuable reading, well worth the dollar to yourselves and families, if you have any taste for horticultural pursuits.

In concluding I will relate an incident which came under my observation last November, in Minnesota. It explains the situation of many men who are planting trees in that and our state. While hunting on the banks of one of their beautiful lakes near the western boundary of the state, I came up to a man who was digging a large hole. He spoke, and I found him to be a German. I wondered what he was digging for, and thought it was for burial purposes, and must be for a giant as it was large, but when I asked him, he said it was to bury some apple trees that he had bought, and driven his team all night to get home with them before they froze. He looked at me in earnest and I think he made up his mind that speaking of apple trees touched me in a tender spot, for he immediately said, "Come to the house and see my trees." I did so, and they were good looking trees; he had fifty. I saw a few Transcendents and Duchess that may live and bear fruit in that climate. He asked me if I thought he could get any fruit from those trees next summer. His land was rich prairie, with nothing in sight to break the wind between them and the Russian Possessions. I looked where he said he would plant the trees, I looked at the hole deep in the ground, I looked at the trees, then last of all I looked at the man. I felt like saying, "My dear friend, allow me to give you a little advice. With your experience, your location, your trees, I would advise you to bury them in as good shape as you can; erect a suitable tablet over them; inscribe on it these words: 'Here lies buried fifty apple trees that cost twenty-three dollars, to wit: fifteen dollars for trees; five dollars for transportation; burying, two dollars, and time spent with agent in harvest, one dollar; total twenty-three dollars.' Then I would be sure that the dirt over those trees was never disturbed, and whenever in future years any man should call to sell you apple trees, take him to that sacred spot and show him the epitaph, and no doubt he will leave you. I think you would realize more profit from your trees in time by taking that course than by any other plan you could adopt." But as we all do a great many times in life, I did not say just as I thought, but left the man carrying his trees to the pit for burial, doubtless dreaming of the pleasant hours he would spend in future years eating the fruit that grew on them, or looking forward to a time when he could treat a weary hunter with cider made on his own premises.

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SIX BEST VARIETIES OF APPLES FOR THE COMMON FARMER.

B. B. OLDS, CLINTON.

On receiving a request from our president, to prepare a paper answering the question, with reasons therefor, "which, in your estimation, are the six best kinds of apples for the common farmer to cultivate, all things considered, having two each for summer, fall and winter," I thought it would be an easy task; but in looking over the list of favorites I find it difficult to cut down to less than eleven varieties, and then only by leaving out several popular kinds. As it may be a satisfaction to some to know what the eleven are, any of which I would be loth to spare, I give them in their order of ripening: Red Astrachan, Sops of Wine, Duchess, Lowell, St. Lawrence, Fall Orange, Fameuse, Tallman Sweet, Jonathan, Golden Russet, and Ben Davis. These are all valuable in their place, as fine healthy trees, and in general, regular and prolific bearers, which makes it exceedingly difficult for me to know where to draw the line in cutting down to six. With the exception of Jonathan, in my experience, in this locality, all seem to be well adapted, and may be properly classed as iron-clads; and this too has generally done well, though rather a slender grower. The particularly fine quality and beauty of the fruit makes it desirable. It partakes largely of the Spitzenburg character, and is preferable in quality to any other winter variety of the eleven. With us, all things considered, this proves to be nearest to what we want as the leading winter apple, for excellence. For reliability it should be top-worked on some hardy stock. But in considering the profit in bushels to be relied upon with indifferent treatment, the Golden Russet takes the lead; the tree is large, well shaped, and seemingly adapted to resist every evil, and is almost always loaded with fair, uniform fruit, although rather unsaleable at picking time; yet when well barreled and kept in good condition, it commands a good price late in the season.

We find in offering almost any article in the market, the first thing to be done is to please the eye of the customer, and when this is once accomplished the game is more than half won. In adopting this as a rule, the Ben Davis occupies a high position. For on showing a well faced barrel of this beautiful looking fruit and letting the customer learn by trial that they have no bad taste, it is almost useless to say to him, "they are not quite as rich or fine in quality as either the Jonathan or Golden Russet," but he will most likely say, "they'll do for me, I'll take them." But for this one exception it would be entitled to the first place on the list, being the best keeper. Tallman Sweet stands high for adaptation and bearing, but on account of being so slow of sale in most

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markets it must fall in the rear, much as I prize it for baking and for making cider apple sauce. I will now go back to where I should have commenced, to consider the merits of the Red Astrachan; it being one of the earliest and possessing great beauty, though not of the highest character in quality, meets with a cordial reception both for the dessert and for cooking. With me it has proved equal to the best, as a tree, and good for productiveness and fairness of appearance. Sops of Wine follows close upon the Red Astrachan, and would be a close competitor but lacks its good cooking qualities, being too nearly sweet and inclined to be dry, though excellent for the dessert when in its prime. Duchess comes next in order, and allowing the eye to be judge, without consulting the taste, it would rank superior to all; on account of the excellence of the tree, its productiveness, and the beauty of the fruit it stands high. Lowell has great merit, as it is a good, reliable tree, nearly always bearing a good crop of fruit nice for cooking and fair for the dessert, but coming so near to the Duchess and followed so soon by the St. Lawrence, it more than fills the bill, the latter kind having all the merits of the Lowell, and being superior for the dessert and in color. Crowding right along, comes the Fall Orange, vying with any of its predecessors in size, fairness and quality of fruit, and generally very productive. Now comes the last on my list, though not least in importance, the Fameuse. This has an established reputation as a tree, and an abundant producer of an excellent quality of fruit for the dessert or for cooking. Its size and keeping qualities are not all we could desire, but with good treatment it is bound to go ahead.

It may be said I have traversed over too much ground. Perhaps so; but I find it difficult to satisfy myself which kinds have the greatest merit, there being too many fall varieties, and no winter variety that meets every requirement desired. For thirty years I have been seeking to find the kind that would bear the reputation with us that the Baldwin, Spitzenburg, or Rhode Island Greening have in the eastern states, but have as yet failed to find it. In order to comply with your request, and give a succession of fruits for all seasons, I will mention Red Astrachan, Duchess, St. Lawrence, Fameuse, Golden Russet and Ben Davis, as the six leading kinds, reserving the privilege of making changes hereafter.

On further consideration, I have concluded that for my use I must have the full dozen, and add Rawle's Janet as one of my favorites. This fills a place no other kind does, although it requires a longer season than our summers to bring the fruit to the best perfection; by giving it the full season till frost comes before picking, it will ripen up good in the barrel, and from this onward, for those who like a firm fleshed, rich and juicy apple, it is hard to find any kind to match it. The tree being later in starting than other kinds, gives more certainty for a crop, the failure of

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which is very rare. The fruit always clings to the tree till picked off. An objection is raised to the smallness of the fruit; this may be obviated very much in pruning the tree well and thinning the fruit in the early part of summer, so that which is on the tree will be fair and of nearly uniform, medium size, and often above medium, thus securing more bushels after taking off half the number set, and of a much superior quality than when left to itself, and making it a valuable late keeping, market variety.

ARBORVITÆ AND BARBERRY FOR HEDGES.

M. C. BUSHNELL, OMRO.

The hedge or live fence has never come into general use in this country for the protection of crops or other property, or for the safe-keeping of animals, neither for borders and ornament about our lawns and grounds. Our European friends tell of the beauties of the well trimmed hedges in their mother country; how pleasant to the eye and mind; how durable and profitable, etc. The question has often been asked, why can we not, and why do we not have the same in this country? There may be several reasons given in reply: Our climate, with extremes of intense heat and cold, wet and dry; another, the constant anxiety of our people to have everything finished and perfected immediately. With our labor and money we can make a fine fence of wood, stone or iron in a few days, and in turn, its form and finish soon loses its perfectness; decay and failure are written on it. The frosts of winter and heat of summer make it unshapely and unpleasant to the mechanical or cultivated eye. It may be ever so well made, the design, the product of cultivated art, yet in a few years it has lost its charms; unlike the live fence, the change is for the worse, downward. The hedge is each year improving in beauty and usefulness. I have yet to see the person that does not admire a well grown hedge.

Now, the question: How shall it be obtained? The first step is to secure a plant, shrub, or tree, that can withstand our climate. We have, as in the matter of fruit culture, held that we must use the same plant to make a live fence here as is used in the old country, and the result, as in fruit, has been nearly a failure. Some plants grow too large and others spread from the root, while nearly all are liable to die in part, or altogether, and our labor is lost; the fence is a failure. Being a great admirer of hedges around yards and grounds, I some years ago began to look around for the plant or shrub with which to gratify my taste, and in studying the cause of success and failure, also the nature and hab-

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its of plants, this conclusion was arrived at: That a plant, a native of a cold climate, one that had withstood drought, and was not of large, rapid growth, and one that did not spread from the roots, would be the kind to cultivate for hedges in this climate and latitude. After considerable study and information, derived from those who had had experience in the matter, the arborvitæ and barberry were selected. The arborvitæ is at home in this state, grows well in nearly all kinds of soil, and is furnished with a large supply of roots. It is an evergreen, ready to cheer and beautify when all nature besides has put on her dreary dress. Who, that has ever seen grounds surrounded by an evergreen hedge in this latitude, where winter claims at least one-half the year, does not feel that not a small share of the dreariness was thus relieved.

The plants should be cultivated in nursery until they are one foot or more high. The soil where the hedge is to be set should be prepared by cultivation to a good depth, one year previous to the plants being set; or if one wishes to set immediately, some old, mellow earth should be put about the roots. The plants should be taken up so as to get all the roots in a perfect condition, and be kept in the shade and wet until again put into the ground. It is very essential that plants having resinous sap should not, in transplanting, have their roots exposed to the sun or air. Set them about eight inches apart in the row. At time of setting, cut off all long, hanging branches. Right here is the key to success in growing a fine hedge: To trim close from the beginning, keep in the line and shape that is desired. An arborvitæ hedge should not be suffered to advance but a little in height or width for the first two or three years; close cutting makes short, compact limbs, and consequently a thick, compact hedge. If once the plants are allowed to grow tall and slim, it never can be made of that fine form as where well cut back at first; when thus treated it becomes a pride and pleasure from the start.

The Barberry is also a native of a cold climate and sterile soil but thrives in most kinds of soils; the branches are well covered with small thorns; the leaf has an acid taste. In habit of growth it is not unlike the currant bushes, continually thickening from the crown of the root, but never sprouting or spreading from them. It is remarkable for its abundant fibrous roots; when one or two years old, the plant is at least two-thirds in the ground, the small, fine rootlets fill the ground to a great depth, but not so much in width, so that drought affects it but little; and never have I seen, in the past six years, with our most severe winters, a plant winter-killed; when once well started it seems almost proof against failure. They should be well set in the ground, the dirt firmly pressed about the roots and well mulched. The growth is slow for the first two or three years; then, if it has been well cared for,

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the growth is quite rapid, new shoots growing six feet high in one year. It will make a good hedge without trimming, as six to nine feet is its usual height, but by careful trimming it can be made into the finest of shapes. It will be seen from the above that it is one of the best of shrubs for hedges in villages and cities, for division of lots, on sides of streets, around lawns and yards, as it does not grow to a very great height and becomes so thick and compact that boys and hens cannot well pass through. Whether it would become substantial enough to turn animals of all kinds on the farm, I cannot say; but it is thought by some that it would. The only objection or difficulty would be, want of strength; yet with its acid leaf and thorns it would not be desirable to eat or play with.

The Arborvitæ will not make a fence for protection against animals, but will add beauty and culture to our village and city homes. What would be more pleasant to the eye, or add more to the appearance of a town than to have its streets bordered with fine evergreen or barberry hedges? and still more to see each lot surrounded with the same. The shade tree has added untold pleasantness and beauties, and, perhaps it might be said health, to our homes. Could not the ever-living fence, in place of the ever-decaying and dying fence, be made to far surpass the shade tree in all these good qualities? I can hardly close this paper without referring to the common but yet mistaken idea, that these hedges are expensive, and require skilled labor to grow them; any one that can work the soil and set plants in line, can do it. The cost of good plants does not exceed fifty to seventy-five cents per rod, and the art of training will be acquired with the growth, if one has a heart in it.

ORNAMENTAL TREES.

ARTHUR BRYANT, PRINCETON, ILL.

The planting of trees for shade and ornament is a matter in which most persons living in the country take more or less interest. There has been quite a change in this respect in the seventy years which my memory runs back. Formerly, in New England, where I was brought up, a tree planted for shade or ornament was rarely seen except in the towns and villages. Almost the only exception was here and there a Lombardy Poplar. More than sixty years since, when I was twelve years old, I planted the first Sugar Maple trees by the roadside that had ever been set in that part of the country. They are still in existence. I well remember that a neighbor ridiculed the idea of planting forest trees near a house, and said that if he wanted to live in the woods he

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would put his house there. The want of taste in this respect need not surprise us, when we consider how much labor it cost early settlers to destroy the forests which originally covered the country. The time has been, too, when a tree near a dwelling might become a convenient stalking horse for an Indian sharpshooter.

In the selection of trees for ornamental planting, the extent of the grounds on which they are to be set should be taken into account. Large trees should not be planted in small yards. A tree to show its best, needs room for full development. Yet how often do we see first-class trees growing in a front yard a few feet wide, or too thickly crowded in large ones. I have seen four Norway Spruces planted in the corners of a cemetery lot twenty feet square. On grounds of sufficient extent, trees may be planted in clumps with good effect.

The list of ornamental trees cultivated in the northern Atlantic states is a large one; but it unfortunately happens that a tree hardy at Philadelphia, New York, or Boston, cannot in all cases be depended on as such in the same latitude west. This may be partly owing to the want of shelter. Even the Hemlock Spruce, a native of the most northern parts of the Union, is sometimes winter killed in exposed situations on the Illinois prairies. The Tulip tree and the Chestnut are barely hardy in northern Illinois; the latter is generally a failure on the prairies, probably owing to the want of a congenial soil. The Irish and Swedish Junipers, as far as I have observed them, although quite pretty while small, become in a few years ragged and unsightly. It is impossible in a short essay to give more than a cursory notice of a limited list of ornamental trees. The White Elm, unrivalled as a street tree, the Sugar Maple, Red Maple and Silver Maple are well known. The Box Elder or Ash-leaved Maple is less common in cultivation; it grows rapidly while young, and becomes a handsome, round-headed, small tree. It grows on the Red River of the north, yet there is a variety in cultivation which does not endure the winters of Long Island. The Norway Maple is, I think, little known in the west. It resembles the Sugar Maple, but is in some respects superior. Its foliage is more dense; the leaves appear earlier in spring and continue later in autumn. The White, Blue and Green Ash are fine trees; and some species of oak, common in the west, merit more attention than they have yet received. The Black Walnut makes a grand tree, but fruit trees cannot live near it. Our native White or Canoe Birch is a very handsome tree; and the cut-leaved variety of the European Birch is beautiful. Among small trees, the white flowering Dogwood (*Cornus florida*) is desirable both for its flowers and scarlet berries; also the Redbud or Indus tree, which is covered with pink flowers before the leaves appear. The Silver Bell (*Halesia*) is hardy in northern Illinois, and probably would be in southern Wisconsin. This is a small tree, producing a profusion of white flowers about

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the size of a thimble. The Juneberry, Shadbush or Service-berry is a fine, flowering tree. The Wisconsin Weeping Willow, with which I first became acquainted through Mr. Stickney, appears to be a variety of the White Willow, and will probably, in the northwest, take the place of the common Weeping Willow, which is not hardy. The Shining Willow (*Salix lucida*) is the handsomest of all the willows. Among evergreens the Norway Spruce is a general favorite. The White Spruce is handsome while young. The White Pine and Hemlock Spruce, although despised by some because they are "so common," are in fact our handsomest native evergreens. The finest ornamental hedges I ever saw were made of the latter. The Scotch and Austrian pines are handsome while small, but become coarse and ungraceful as they increase in size. They are of that class of trees which appear best at some distance. The Arborvitæ makes a quick, cheap and handsome screen, which becomes very dense by clipping. The Siberian variety is of slower growth, has a denser, darker foliage, and retains its color during the winter. Within the last twenty-five years many coniferous trees have been introduced into the Atlantic states from the Pacific coast, from Japan and other countries. Many of these are known to be unsuited to the climate of the northwest, and very few of the remainder have been thoroughly tested.

Among the most desirable ornamental trees are the Magnolias. There are seven species, natives of the United States, all but one hardy as far north as New York. They are little known in the northwest; I think most of them are not in common cultivation in any part of the country. Some species are as yet imperfectly tested here. There are three kinds which I have tried to my entire satisfaction, which I will recommend for trial in southern Wisconsin, and which I will describe more fully than the trees hitherto noticed.

The Cucumber tree (*Magnolia acuminata*) is a large and lofty tree, the wood of which is much used in the manufacture of pumps. It is perfectly hardy; I have trees thirty feet high, which have never been injured by the severest winters. Its growth is vigorous, its shape symmetrical, and its leaves are large and handsome. The flowers are numerous, and rather large; but do not add much to the beauty of the tree. The Heart-leaved Cucumber tree (*Magnolia cordata*), a smaller and more southern tree, appears to be equally hardy as far as I have tried it. It has handsome flowers which are yellow and fragrant, but is more rare, and consequently of higher price.

The Laurel Magnolia or Sweet Bay (*Magnolia glauca*) is one of the most desirable species. It is found in swamps near the sea coast from Massachusetts to Louisiana, but nowhere far in the interior. In the far south it grows to the height of fifty feet, and is evergreen; in the north it is smaller and retains its leaves until

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December. The flowers are white, two inches across, very fragrant, and are produced in succession for from four to six weeks. They are collected in large numbers with a cluster of leaves attached, and are sold in New York and other cities. My first two attempts to cultivate this tree failed in consequence of the trees being grown in a warmer climate. They were killed to the ground every winter, and finally perished. A third trial, with a northern grown tree, succeeded perfectly. It is now ten feet high, and has received no injury from the destructive winters which have occurred within the last few years. The tree blooms when four or five feet high, and nearly every shoot produces a flower. It is surprising that a tree of such beauty of flower and foliage should not be more generally cultivated. It is next to impossible to transplant it successfully from its native localities, which has created an impression that it is not easily managed. Trees raised from seed thrive in garden soil even better than in their native swamps. Magnolia longifolia and Magnolia Thompsoniana are varieties of this species, with larger leaves.

Soulange's Magnolia (*Magnolia Soulangeana*) is a hybrid between two Chinese species. It is a large shrub or a small tree. I have one ten feet high, and have seen them of the height of twenty feet. It blossoms profusely before the leaves are fully developed, and a second time sparingly in late summer. It is usually in bloom four or five weeks. The flowers are large, pure white within, and tinged with purple on the outside. This kind is propagated by layers and grafting. This and the Magnolia glauca grow more rapidly and make finer trees, grafted on the Cucumber tree.

The seed of the Magnolia is best sown in autumn, immediately after it is ripe. If kept till spring, it should at once be mixed with twice its bulk of damp sand; otherwise it will soon spoil from drying or becoming mouldy or rancid. It is somewhat tardy in coming up in spring, and care should be taken that mice and squirrels do not find it. Seedlings of the Magnolia glauca make very little growth the first two or three years, and require care to get them well started. All the Magnolias should be transplanted or root pruned every two or three years while in the nursery. With this treatment they may be successfully managed They should be planted in sheltered situations as they do not endure the lashing of unchecked winds on the open prairie.

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THE WORK OF THE DAY.

PRESIDENT J. M. SMITH, GREEN BAY.

Read at June Meeting, at Janesville.

Ladies and Gentlemen:—It can hardly be expected that one so almost entirely unacquainted with your beautiful city and its inhabitants, as I am, should be able to say the things that would be the most appropriate in return for the kind welcome we have received from your representative upon this occasion. An orthodox address of this kind might perhaps deal somewhat in flattery, but to this I am unaccustomed, and do not believe that you would appreciate it. But a sense of justice, as well as common sense, teaches me that the most appropriate thing to say is "thank you." And, ladies and gentlemen, kind friends, one and all, I most heartily thank you for the kind invitation that you sent us last winter, and for the very pleasant welcome that we have received at your hands since our arrival here. I thank you not only for myself, but for the friends and members of the society. I sincerely hope that you will not have occasion either to think or say that your kind hospitality has been thrown away, and I trust that the papers read, and the discussions that will follow them, will in some slight manner, at least, recompense you for your kindness at this time. In following out this idea, I would occupy a brief space of time in throwing out a few hints as to what seems to me to be the most pressing work of the day for our society. The members of our state society, in common with other horticulturists in this and some of the other northwestern states, have for many years past occupied a peculiarly trying position. Coming, as most of them did, from the east, and, in many cases, from nearly the same latitude as their present homes, what was more natural than for them to think and implicitly believe that the favorite apples and pears of their eastern homes would be equally at home here? What was more natural than to think and say, that as the Spitzenburg, the Baldwin, the Northern Spy, and others that might be named, did well in nearly or quite the same latitude in the eastern states, they surely must do well in the still richer soils of our beautiful northwest? Why should not the rich and luscious pears that seemed there to come, as a matter of course, with every returning summer and fall accompany us here, and cheer our hearts by adding both health to our bodies and beauty to our homes? Why should not the cherries, the plums and the peaches that lived and thrived upon the rocky hillsides, or perhaps upon the almost barren sands of the Atlantic states, not only live, but grow, bud and bloom, and bear their rich burdens of fruit upon our beautiful prairies, or around the homes that were springing

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up in the woodlands, as the primeval forests disappeared from view? What was more natural, or more rational than these conclusions? Surely, they seemed to be just, true and wise, and they were acted upon. After years of trials and care, and, in some cases, after putting all their means into this enterprise, they were forced to the sad conclusion that, in a large majority of cases, their favorite varieties of eastern fruit were either partial or entire failures here. What should be done? Give it up, and say that fruit would not grow in the northwest? By no means. Such is not the history of the horticulturists of this state. They have patiently toiled on, year after year, in a long series of experiments, sometimes seeming to be upon the eve of a brilliant success and able to present to the lovers of fruit a variety of trees that could safely be termed the "Iron clad;" an unusually hard winter comes, with perhaps other unfavorable circumstances connected with it, and when the spring follows, they find that a large proportion of their supposed iron clads are dead.

This has been the case again and again. To-day but few of us would recommend any one variety of either apples or pears, as being perfectly hardy in all portions of the state. Shall we give up the contest? By no means. Although we have not succeeded to the extent of our desires, or, as we thought, according to our reasonable expectations, still we have learned much. We have demonstrated some things that will be of great value in the future. Among other things, we have learned that there are some varieties of apples that are reliable, iron clad, if you please, in some locations in different parts of the state. We have learned that there is, at least, one spot in the state where pears can be grown and sold at a reasonable price, and at a fair profit. We have learned that some of the finest varieties of table grapes grown between the Atlantic Ocean and Rocky Mountains are perfectly at home with us. We have learned that no finer crops of strawberries can be grown in the United States than with us. Currants, with even moderate care, yield a large crop almost as certainly as the spring and summer follow the winter. We have learned that two or three varieties of cherries do reasonably well. Raspberries, with winter protection, are probably more reliable than in the states south of us. And last, though not least, our forests abound with a variety of trees that readily bear transplanting, two of which are found almost everywhere, and when transplanted, grow and flourish in almost all our soils, and when grown they may, without injustice, be called the world's favorite shade and ornamental trees. I refer, of course, to the elm and the maple. Now, with all these facts and others that might be named, can it be said that your labors have been in vain? While all that we should like to see done has not been accomplished, still much has certainly been accomplished, and the way made clear for both present and future work.

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And what of the present? What do we most need? It seems to me that measures should be taken to ascertain more accurately than most of us now know, in what portions of the state our most hardy varieties of apples do the best. For instance, I think I have never seen finer looking Fameuse trees than upon my friend Tuttle's farm, and other places about Baraboo. In fact, I believe he may, and does consider them iron clad in his portion of the state. In the portion of the state that I represent, they may safely be considered a hardy apple, still not as hardy as about Baraboo. With us they have been killed sometimes when they were in what seemed to be good locations, and were well cared for; while with my friend Wilcox, upon the high lands near the Mississippi river, they have been nearly destroyed within the last five years. Now where are the dividing lines, where these trees cease to be as valuable as about Baraboo? Where do they cease to be worthy of cultivation? What is true of the Fameuse is equally true of other varieties; and if we had just this knowledge, and had it thoroughly disseminated throughout the state, it would be of immense advantage to our people, until such time as we shall have varieties sufficiently hardy to endure our severe winters in all portions of the state. I think we shall yet have such varieties, and do not believe the fruit growers of this state will cease their efforts until they are obtained. This same information is equally desirable with regard to pears. With this fruit we have, as I firmly believe, made two great mistakes. We have been too regardless of both varieties and location. We should confine ourselves to a few of the most hardy varieties, and then select the location with great care. There are but few places in the United States where pears can be grown more readily than in my native county. There are pear trees on my father's farm that have been in bearing over eighty years. And yet, within one-fourth of a mile from where they stand, I would no more think of setting a pear tree than I should of cultivating oranges in my Green Bay garden. Yet the soil is, perhaps, as rich as where they now stand, but it is of an entirely different character, and the location is also different. The little pear orchard near my home in Green Bay is also a remarkable illustration of this kind. There they stand upon high, dry, gravelly land, exposed to the storms and cold from almost every direction, being only partially protected from the east and northeast by forest trees. They have endured our most severe winters with perfect impunity. For the last ten or twelve years they have not failed to produce a crop, and, I think, but few years have passed that the owner has not been obliged to put supports under the branches of more or less of them, to keep them from breaking down with their load of fruit. If I had a pear orchard of ten acres, as valuable as that has been, is now, and promises to be in the future, I would not exchange it for the best $10,000 of bonds that our government ever issued. Now to say that

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there is no other spot in Wisconsin pears will grow, is simply nonsense. I firmly believe that there are a thousand acres of land within five miles of where those trees stand, where they might be made to do equally well.

Upon these points we certainly need more information. As our nurserymen are doubtless the best posted men in the state upon these subjects, it is of the utmost importance that they should not only obtain more information, but that they should use it with the most unswerving integrity. Let them never recommend a tree for anything more than they honestly believe after years will bear them out in doing; for the great body of fruit growers in this state do now, and will in years to come, look upon the nurserymen who are connected with this society as the highest authority upon these subjects. To have them lose that confidence would be a loss that a whole generation could hardly repair; hence its great importance.

Here I wish to say a few words with regard to our nurserymen. I may say what I wish to, more appropriately than some others; as I never have been, am not now, and never expect to be engaged in the business. Since my connection with this society I have been more than once somewhat surprised, but exceedingly gratified, to hear members state upon the floor of our conventions, when they knew that their words would go the length and breadth of the state, that certain varieties of fruit were unsafe, or perhaps worthless for cultivation, when I knew they had them for sale. By so doing they were acting a generous and noble part, in sacrificing their own personal interest to what they deemed the best interests of others. I do not know but each and every nurseryman in this society would, if necessary, do the same thing. I sincerely hope that such would be the case. After the years of toil and sacrifice that many of our nurserymen have had to endure, I deem such actions in the highest degree praiseworthy, and I regard it both a duty and a pleasure to speak in this public manner, as it is in such direct contrast with the conduct of most of the tree peddlers it has been my fortune to meet with from other states.

Another subject that it seems to me should receive more attention than it has heretofore, is that of our common shade trees. I know of no way to get so good an idea of the value of them as by seeing the contrast between towns where there are few or none and those where they are plenty. Last fall, while traveling through one of our neighboring states, I passed through a number of small towns where there were but very few shade or ornamental trees of any kind. They had a forlorn appearance, as such towns always have, no matter what their other beauties may be. I stopped for a few days at Terre Haute, Ind. The town or city is situated upon an almost level prairie, with no natural scenery in or about it to commend it above hundreds of other towns in the

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United States. Many portions of the city are almost forests of maples. They have been set with care, and in numbers, literally by thousands. It was about ten days after the first heavy frosts. To say that they were beautiful, gives you but a very faint idea of the almost marvellous appearance of some of the streets. They seemed almost like the enchanted ground. And yet all this wondrous beauty was due solely, or almost so, to our common Sugar and Soft Maple trees. They lack somewhat of the grandeur of the spreading or Weeping Elm, but for beauty of form and foliage throughout the season, I have been reminded of the remark made by a certain writer on fruits, who said that "perhaps God could have made a better berry than the strawberry, but it was very certain he never had done it." I have thought perhaps a more beautiful tree than the Maple exists, but, according to my uncultivated taste, I have never seen it.

Who that has traveled through New Haven and seen her elms, or the parks of the city of Newark, New Jersey, or Broadway in Louisville, Kentucky, has not felt grateful to the heads that planned, and the hands that set those magnificent trees that have already added to the comfort and the happiness of millions of our people, and will add to the earthly happiness of millions yet unborn.

Another thing to which it seems to me we might and ought to pay more attention, is the cultivation of small fruits, and ornamental shrubbery around the farmers' homes. I think sometimes that the farmers in this state and latitude are more excusable for neglecting such things than those in the states south of us. Our winters are long, the springs short, and when sowing and planting time comes he is invariably in a hurry to get his seeds in the ground, and often, when he really intends to set out trees and shrubbery, the time passes, and before he is aware of it the season for that kind of work is over; and then he must wait another year, very likely to repeat the previous spring's experience. I do not know what course would be the best to pursue to get farmers more thoroughly interested in these matters, but one thing I do know; and that is that we have by far too many bleak, desolate, uninviting-looking houses among our farmers. I think sometimes, as I am riding by the farms, that I can pick out the ones where the boys are in a hurry to leave home, and where the girls do not care to become farmers' wives. Friends, these things ought not so to be. The majority of our farmers cannot afford to have expensive homes, but they can and ought to have pleasant and cheerful ones; and there is no good reason why they should not have them. I do not wish to take your time upon this occasion to elaborate any plans of my own, but simply call your attention to what seems to be a great necessity in our state; and if you can devise plans and ways by which the great mass of farmers, who are now so careless and thoughtless about the appearance of their

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homes, can be reached, and induced to spend a small amount of money and a little time each year in adorning the grounds about their now cheerless houses, by adding annually even a very few ornamental trees, fruits and flowers, you would be doing a work of immense good to the whole commonwealth. If this could be accomplished, I have no hesitation in predicting that in ten years time there would be far fewer farms offered for sale in this state than to-day, and those so offered would be held at much higher prices than they now are.

I do not wish, or ask, that less interest or care should be taken in developing our apples and pears, or, if you please, in the commercial department of horticulture; but I should like to see more interest taken in the ornamental department. I think that there is a love of the beautiful implanted, to a greater or less extent, in every human breast; and where it is cherished and fostered, instead of being neglected and even crushed out of existence, as it sometimes is, a person will never become altogether lost to good influences. We have all read, time and again, of those who started from the lowest and vilest of grog-shops to commit some fearful crime; and when fitted for it in those terrible dens they are very ready to attempt any purpose, even though it may be to take the life of one near and dear to them. But who ever read or heard of a person going into a bed of flowers to fit himself for the commission of crime by picking and preparing a beautiful bouquet. I doubt if the history of the human race will furnish an instance of the kind. It seems to me that the love of the beautiful must ever be accompanied by a love of the pure and the good. Such being the case, let us work on. Let us work steadily, honestly, and intelligently. Let us gather information from each other in our meetings together. Let us gather it in every way that we can while pursuing our business or our pleasures. And when we have obtained it, let us use our best efforts to impart it to others who are less favored than ourselves. If we do this, our efforts will surely not be in vain. Trees will grow around and adorn many a home that now looks desolate and homeless. Fruits and flowers will bud and bloom, and yield their treasures to gladden the hearts of many who have known but little of their comfort, or their beauty. Many a home that is now only a place to stay, the headquarters, as it were, of the family, will become a habitation of beauty, a sacred spot to those who dwell within; a place to which they will turn with a lingering gaze as they leave for a journey of either business or pleasure, and to which they will ever return with pleasure and delight.

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A SUCCESSION OF SMALL FRUITS FOR SUMMER.

J. S. STICKNEY, WAUWATOSA.

Read at June Meeting at Janesville.

If a thoroughly responsible party should advertise in all the papers that he would furnish any desired quantity of the choicest strawberries, raspberries, currants, gooseberries and grapes; if every grocer should assure his customers that he would have these on sale, each in its season, fresh every hour from the garden, at the very low price of two to three cents per quart for strawberries and raspberries, one to two cents per pound for grapes, and twenty-five to forty cents per bushel for currants and gooseberries, what think you would be the result? Would not salt meats and hard bread wonder what had become of their friends? and would not short-cakes and strawberries and cream have a "run" unprecedented by "the latest fashion"?

Well, it is my pleasant work to-day to inform you that these generous proposals are now made to us, and subject to a few easy conditions, this luxurious living is now within our reach. Generous, bountiful Mother Earth spreads them in her lap before us, and not only *offers* but *urges* them upon us, by a thousand social, healthful and economic arguments. Unlike the business tradesman, she does not say "cash on delivery," but seems graciously pleased and well content with an occasional hour's labor, at odd and unoccupied times, in payment for her treasures; much of it labor that may be joined in by every member of the family, and thus be made more a recreation than a task. Having enquiring minds, let us investigate a little and see how it is done. Wishing to reach the wants of the smallest land owner, we will take a very small illustration.

In strawberries, one square rod will accomodate one hundred and eighty plants, one foot apart each way, and every third space between rows two feet, to facilitate picking. These with the best treatment will yield at least one hundred quarts: a basis for two hundred dishes in strawberries and cream, or fifty to one hundred short-cakes for a whole family. Think of it!

In raspberries, one rod, at two feet each way, will hold sixty-four plants; with staking and close training, this distance will answer well. Seventy-five to one hundred quarts from these is a common yield, bountifully supplying a small family with the most aromatic and delicious of berries.

In currants, sixteen plants, four feet apart each way, will yield at least four bushels; equal to the wants of almost any family; and with the aid of drying, canning and preserving, will furnish a pleasant and healthful acid throughout the year. Of gooseberries the same is true as of currants.

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In Grapes, at five and a half feet apart each way, we have room for nine vines, capable of producing one hundred to two hundred pounds. These, as a luxury, are unequaled for elegance and delicacy; ornamenting our tables, gratifying the most fastidious taste and promoting good health.

Here, then, are five square rods of ground, yielding twelve to fifteen bushels of fruit; and at what probable annual cost? Varying circumstance make an *accurate* estimate difficult, but I will make a wide margin and say from five to ten dollars. Do you know of any other so cheap? In an economic way does it not compete with the meat and flour, the "hog and hominy." If every family in the land would annually produce and use this amount of fruit, would it not be pleasant and profitable for us all, though perhaps bad for the business interests of our physicians.

Strawberries, the first fruit of the season, easy of culture, abundantly productive and deliciously good, naturally command a large share of attention. The multitude of varieties, each having its friends, renders it unsafe to commend or censure with much decision. I will therefore only say that in searching for something that should pay better and give better satisfaction than the Wilson, among those pretty well tested, Green Prolific has done most for us; Boyden nearly as well; among those more recently introduced, Prouty's Seedling, from two years' observation and one season's actual fruiting, seems a long step in advance of anything since the introduction of the Wilson.

Specimens on your tables will give an idea of its quality and general appearance, though not a fair showing of its capabilities as to size. Neither is our brief trial any sure guide to its real value as a field or market berry. The points claimed by its introducer are large production, good quality, vigor and hardiness, and long season; also that it will bear high culture, not growing too much to vines, but bringing out and fully maturing all the fruit it sets. It has perfect blossoms, and for the two seasons we have had it, has set a heavier crop than Wilson. I recently saw, at the Nurserymen, Seedsmen and Florists Convention, in Chicago, twenty baskets of wonderfully fine berries under the name of Forest Rose, ranking in size and quality with the best grown samples of Jucunda or Triomph, and claimed to be hardy, and an abundant bearer. Also a fine show of plants and fruits, under the name of the Prairie Farmer strawberry, heavy clusters of large berries, of good form and color; seemed a little too acid, but not in good condition to judge of quality. Also a variety from Iowa, under name of Red Jacket; a very showy berry, good size, reasonably firm, deep, rich, dark red, almost crimson from surface to center. The strong points claimed for it are great fruitfulness, and a thrift, vigor and hardiness which enable it to produce three or four full crops of fruit the same planting. This last point seems to me to be of great importance, and the want of this

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is the weakest point of the Wilson. In our practice, we have come to consider a second crop of Wilsons as costing more than they are worth, and we therefore turn the vines under as soon as the first crop is off, thus having to give two years of land and cultivation for a single crop of fruit. When properly fertilized, the Green Prolific will give two, and sometimes three good crops. A neighbor, growing strawberries largely, says he can thus grow Green Prolific for two-thirds the cost of Wilson, and I think he can. Very few of the large eastern growers plant the Wilson, but use kinds with vigor of plant sufficient to hold possession of the soil several years, and perhaps to be renewed by plowing alternate strips through the beds. This largely reduces the cost of production, and if the crop is something less, there is still a net gain. In the light of dollars and cents, should we not look for improvement in these points rather than in extra size. Having the constitutional vigor can we not work up all other desirable points.

Any suggestions from me as to culture may seem superfluous, but I cannot leave the strawberries without *protesting against fall planting*, as being in most cases a waste of time, money and plants, and often tending to disgust and discourage the planter. It is true that fall planting sometimes succeeds, and a partial crop is secured the coming season, but it is more forcibly true, that in those very instances the *cost* greatly overbalances the *returns*. For amateurs on limited space, or to produce the very largest results on a given space, planting in hills and removing all surplus runners, is much the best, and when once systematically entered upon, it will not be found so very troublesome. With all the small fruits, no one must expect the highest results, unless his land be *deeply and thoroughly worked* and *liberally enriched*.

Raspberries as grown for dollars and cents, in this climate, refer only to a few varieties of black caps, and perhaps two varieties of the red. Of these the Miami has done most for us. Doolittle is a few days earlier, and perhaps a little hardier, but not so strong a grower, and does not produce as large crops. Davison's Thornless has some friends, but more, I think, among amateurs than among market growers. Philadelphia, we have long considered the most profitable red berry, but two seasons of fruiting the Turner has induced us to plant an acre, thinking that perhaps it will give us an equal or larger crop, and of better color and quality. It has the bad habit of throwing up a multitude of suckers which wander promiscuously into all by and forbidden places, but free use of hoe and cultivator will correct this evil, and, if it proves as hardy and productive as these two seasons indicate, we would not like to do without it. These market kinds also do very well for high garden culture, and pay bountifully for the extra care, but those who are familiar with the larger size and finer quality of Brinkle's Orange, Franconia, and others of

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this class, will hardly be willing to do without a few of them, even though they require *trenched soil* and *winter protection*, for which they may not pay in dollars and cents.

Blackberries *should* have a place just after the raspberries, but unfortunately, the questions *how to plant* and *how to treat* are not yet satisfactorily answered. The humiliating fact is brought forcibly home to us, that with all our boasted horticultural skill we are outdone by the thin, poor soil of the uncultivated woods. This is not pleasant or comforting, but it should operate as a tonic or stimulant to every horticulturist to work earnestly, with different varieties, and different modes of culture until better results are attained.

Currants and gooseberries are so very common as, if planted at all, to be put in the most unfavorable and out of the way place and to receive almost utter neglect instead of care. Over a large part of this state the currant worm is now mercifully removing them to a "happier land." Let us hope that when gone they will be missed, and their good qualities better appreciated, and that when others are planted, they may be allowed to enjoy the advantages of civilized and refined society. We assure you they are worthy and will do honor to the best position you can give them.

Grapes, in limited grounds, can often be trained on the sides of buildings or fences, or over arbors; in this way, while occupying but little space, and yielding bountiful returns of fruit, they may beautify our home, cover unsightly objects or afford grateful shade.

Thus ends the small fruit list for our garden. Distributed by littles among our homes, but *aggregating an untold value.* Spread before us, as I have said, at a merely nominal price, and on the easiest terms, and now it *rests entirely with ourselves*, who shall enjoy little, and who shall enjoy much.

SUMMER FLOWERS.

MRS. D. HUNTLEY, APPLETON.

Read at June meeting in Janesville.

"Flowers, bright, beautiful, sweet summer flowers,
They are linked with life's sweetest, happiest hours."

Those who have delightful conservatories and lovely window gardens, with rare, blooming plants and blossoming vines, who have watched the unfolding of leaf, and bud, and flower through chilly autumn and frosty winter, know very little of the joyful

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anticipation with which their less favored sisters wait for the coming of the summer flowers.

For those who must forego the delights of flower culture for more than half the year, we may, with much propriety, claim as summer flowers all of Flora's gems, of every clime, that will bloom in our gardens, after the snows of winter, before the frosts of autumn. The first bright days of spring assure us that the summer beauties are near, and we turn from the sweet wild flowers to find the bright faces of our pansies peeping at us through their winter covering, and with eager hands we hasten to select the seeds, and plan for the little flower-beds by the window, or the larger ones upon the lawn, or for the spacious garden that will adorn the home and beautify the landscape. With elaborate grounds and abundant help to perform the labor connected with flower culture, and a purse commensurate to the wishes of its owner, it is as easy as it is delightful to gather about us the treasures of nature; but remove all these pleasant conditions, and leave the woman of taste in her humble dwelling, with simple garden, surrounded by household cares, but with an intense, passionate love for the beautiful in nature, and we shall see what difficulties this love can conquer. Hundreds of homes, flowerless to-day, might be made beautiful, if the inmates of such homes would never wait for favorable conditions, but make the most and the best of present circumstances. We have mentioned elsewhere the shrubbery and perennials best for a small garden, and it shall be the purpose of this paper to make some practical suggestions concerning such annuals and plants, and their arrangement, as will give to the working women the most pleasure for the least labor.

To those who must rely principally upon seedling flowers, it is a comfort to know that a certain florist has said, "one dollar wisely invested in flower seeds will afford more pleasure to the average flower grower than one hundred dollars' worth of plants." It is doubtful if there is any way that a few dimes can be used, that will expand into so much beauty as when seeds are purchased, planted and successfully grown. For beginners in flower culture, packages of mixed seed will be found very satisfactory, but, as a rule it is better to purchase separate colors, especially of scarlet and white. If one can have but few varieties, a bed of verbenas bordered with pansies will make any door yard a charming place. The old and well known candy tuft, with its variety of colors, is almost the equal of the verbena; the white is excellent for bouquets and showy in the garden; for either of these purposes one never has too many white flowers. These three we deem the best, because they will give beauty and fragrance all the summer, and if the beds remain undisturbed through fall and winter, the seeds will self sow, and give you countless plants in the early spring without further care. This is an important item where time is limited.

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A bed of Phlox Drummondii is rarely excelled in brilliancy of bloom; the scarlet is about equal to the old Defiance Verbena, and the rose-colored and pure white are lovely among cut flowers. The Petunias make a magnificent display as bedders; no flower is more beautifully marbled and shaded than this, only this one would make the lawn attractive to every visitor. The double balsams, too, are very handsome; when skillfully grown, they are like miniature trees; we have seen the blossoms nearly three inches in diameter; the crimson and pure white are so much like roses, that when arranged with rose foliage for decorations the deception is complete. Portulaccas, also, in the sunshine, are almost as beautiful as roses would be without fragrance. The pinks, too, the dear old pinks, with their spicy perfume, they always remind one of the long ago. These are always charming, and if planted early in spring and again in July, you may have pinks in all their glory twice in one summer. Then the Asters must not be forgotten; these are the glory of the garden in early autumn, and one of the best of all the garden flowers for floral ornaments, because varied in color and perfect in form, whether large or small, and will retain their beauty in water when all others have faded. Much the same is true of the Ten-week's stock, its splendid spikes of bloom cannot be surpassed in unique shades; the buff is the rarest color in the garden; but if you select the stocks or asters for your favorites, and have only them, you will wait long for your flowers, and a chilly night may assure you that you have waited in vain. If you have space and conveniences for preserving that most magnificent of all annuals, the Dahlia, you will find it highly satisfactory; if planted early, the first blossoms will appear in June; these will increase in size and beauty, and give you flowers of the richest texture, and of every hue, like crimson velvet, or royal purple, or brightest rose, or snowy white, and bloom continually, until slain by the Frost King, when in the height of their splendor. If you cannot have this Queen of the garden, and wish something of easy culture and constant display in the door-yard, from the first of summer to the last, there is nothing that will suit all the conditions so well as the double Zinnia. This may be surprising to those who know its coarse, bushy habit, but we speak advisedly. We have seen a bed of Zinnias that would adorn any lawn, in city or country; its large, double flowers, in all the shades of scarlet and crimson, orange and buff, pink and pure white, nearly equal the Dahlia. Then, somewhere, there must be found a place for a row of sweet peas; their long, wiry stems are well suited for tall vases, and their sweet fragrance is always pleasant. Besides these old and showy annuals, there are many delicate flowers that make no display in the garden, but are charming to those who love them. These should have a place near the house, where you can see them often and learn their beauty. One of the best of these is the white Centranthus; its wax-like flow-

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ers, in clusters of tiny tubes, are beautiful everywhere; either alone with delicate green, or in bouquets. The pink and red are also very good; this is a thrifty grower, and remains bright in the garden when nearly everything else has been destroyed by the frost. Another little beauty is the blue Phacilia; this always reminds of the lost darling, who took special delight in its delicate flowers and little green and white buds; its foliage is very graceful in decorations, and its lovely blue flowers are always ready for you when that rare color is wanting. This will reproduce itself in the garden every year, and give you only pleasure wherever it appears.

The Nemophilas are the frailest of all the annuals, but if you love their muslin-like flowers, you cannot do without them; they should have a conspicuous place with only the morning sunshine. But the tiniest, daintiest of all is the Gypsophila muralis, and elegans, one pink, the other white; this is certainly the loveliest thing imaginable in floral ornaments, and for vases or baskets of growing plants it is equally good. It grows readily from seed, comes up thickly, like moss, and should be sown on the surface after the plants are set, or it may be taken up in bunches and set wherever you please; in any place, it will cover all deficiences with a misty vail of beauty. For profusion of bloom and fanciful foliage combined, we know of nothing that will equal the Nierembergia. In the garden it will cover the ground like a carpet; in a lawn basket, with other and larger plants, it is most excellent; as a window plant, in summer or winter, it cannot be equaled by anything of its class, and where fine sprays of green and lavender colored flowers are wanted for ornaments, it has no superior. Then the dear, little Gilia must be remembered; the flowers in many shades of blue and purple, and sometimes white, vary much in size and form, their long, firm stems make them exceedingly useful for large bouquets. Agrostemma is much like it in this respect. Its bright flowers are much like single pinks; one of these with a little white and green is a thing of beauty, not soon forgotten. The list of flowers is long and lovely. We have mentioned a few, those which, by experience, have been found most durable; if you cannot have all these, select such as best suit the taste or fancy. As time goes on, each year try one or two new varieties; in this way, the flowers you do have, whether few or many, may be the rarest and choicest of their kind. If you have neither time nor health to go out upon the lawn and beautify the grounds about your home, you may bring these summer beauties still nearer to your rooms, and indulge in that highly satisfactory method of flower culture, piazza gardening. For this purpose, vines are indispensable; these alone will cover the roughest support with the loveliest drapery, and make the rudest tenement a bower of beauty. The best seedling vines for the open ground are Convolvulus, Canary vine, Star Ipomœa, and

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Maurandya; the last is not often used in this manner, but we have known an old root taken from a basket to grow twenty feet in one summer. At each of the piazza posts, set one or the other of these vines, and between them, set such Dahlies as will give you the most pleasing contrast in color; the dwelling will protect from the winds, and the drip of the eaves give necessary moisture. Many of the standard annuals just mentioned may be used as piazza plants. Asters, Balsams, and Stocks are charming in pots or vases; smaller flowers make a handsome border, grown in boxes upon the floor. Portulacca at the sunny end will be very attractive all the summer. If one has neither plant stand, nor place to set one, a long, low shelf, supported by brackets, under and between the windows, will accommodate many plants, either in pots or boxes, after the manner of window gardens; in these, many conservatory plants can be grown with the highest success. Geraniums, especially, are very satisfactory; slips are easily obtained and will grow rapidly, or they will bloom from seed in a single summer. Foliage plants, of any description, are also very appropriate, particularly the Coleus; these are not always satisfactory as house plants, but on a piazza, with eastern exposure, they will attain a wonderful growth, approach maturity and show signs of age in early autumn. Heliotropes, Callas, Begonias and Fuchsias are also excellent; any plant that matures quickly is desirable.

But the crowning beauty of this kind of gardening is the hanging basket; it matters little what is the size or shape, luxuriant vines and thrifty plants will beautify any receptacle; dishes of almost every kind are used, and others may be constructed, both elegant and useful, or elaborate ones may be purchased, if preferred. In selecting vines for baskets, it is a difficult matter to decide what will give most pleasure; those which grow rapidly and afford most foliage and bloom, are most satisfactory; but where there is space and time, nearly every vine of the greenhouse or garden is attainable and appropriate for the piazza. For rapid growth and profuse ornamentation, in sheltered situations in summer, we have never seen a vine that would equal the German Ivy; for the wall, and to run over windows or door-ways, where luxuriant foliage is wanted, it cannot be surpassed; a plant set in spring at each end of a window-box will cover yards of space before autumn. Cobæa Scandens is also a rapid grower, and will do more in the way of decorating walls and windows than anything we know, except the ivy. Among these large vines, should be some pretty bloomers to brighten the green. Thunbergia is excellent in such places, having little foliage, its conspicuous flowers are very attractive. Abronia also is good for this purpose. The Cypress vine is a lovely thing, but sensitive to cold and does not germinate easily, unless the seeds are scalded; it should have a place where its fine, airy foliage and waxlike flow-

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ers will not be concealed. The old Madeira or Mexican vine is one of the very best things for baskets or posts, or when you wish loops or festoons of vine. But if you wish a vine that will cover a basket or trellis with both flowers and foliage, there is nothing that will excel the Maurandya; its lovely blossoms of purple, blue and white, on delicate sprays of green, make it the most desirable of all the basket vines, even that dainty, little beauty, the Smilax, cannot surpass this, except for decoration.

Many of the trailing vines will add much to the beauty of baskets; one of the best of these is the Kenilworth Ivy; it is one of those graceful thing that are pleasing everywhere; in tiny baskets, or shells suspended by short chains or ribbons from brackets, or in vases beneath pictures it is very lovely; but its most appropriate place is against some background, hanging like a vail from the edge of a window garden. The old-fashioned moneywort, and the new golden variety are both excellent; few things make so striking a contrast.

The three varieties of Tradescantia (wandering Jew) are all good, the buff and green especially so; it is a rampant grower if given shade and moisture, but breaks too easily for baskets in exposed situations; if set against a background, its oddly striped leaves are very attractive. The Vinca and Abutilon and Deeringia are all good foliage vines, but not so useful for the piazza, because of slower growth.

The hanging grasses, too, are very useful in baskets; Panicum Variegatum is one of the best; some of its leaves are white, tipped with pink, and just striped with a single line of green. Another lovely thing, but rarely seen, is the Ficus Repens. This is best in large, low vases; it has rich, fine foliage and woody stems, and is very handsome in floral decorations.

The old ground ivy, with its little blue flowers, will grow where nothing else will; so every place can be occupied. Conceal it behind a row of plants, and it will creep out and cover the handsomest or the homeliest receptacle with its pretty leaves. If one has the slightest admiration for those gigantic climbers, the gourds, the Bryonopsis will give entire satisfaction. It is a graceful, elegant vine, resembling the grape, and is very suitable for a trellis.

Many of the vines mentioned will make a lovely basket. Combining one or two varieties, best suited to each other adds to the beauty of all. In this, as in other things, experience is a very successful teacher. An ivy basket is about the nearest approach to perfection possible in baskets. A small plant set at each side will run up the handles, fill the centre with many branches, and return to the floor, growing three or four yards in a few weeks. Some of the pretty trailers should be set at the edges, and a Coleus in the middle, with a bunch of Gypsophila, and you will have a basket that will be the admiration of all who see it.

It will be long before a more pleasing way can be found for

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growing vines and trailers than in hanging baskets; but next to this, the most attractive thing is a perfect specimen of some procumbent plant, placed upon brackets, between windows and about doorways. For such situations, there are several very suitable varieties which we shall call bracket plants. Among the best of this class is Othonna Crassifolia; it has rich, heavy foliage, easily broken by winds, and the shelf affords the necessary protection. The Pilea (Artillery plant), with its mossy, drooping foliage, is very graceful and rarely seen. The old-fashioned dew plant, with its thistle-like flowers, is very easily grown, and appears better in such situations than anywhere else. The new variegated variety is very beautiful, but is the most delicate plant to handle we have ever seen, place them anywhere else. But the rarest, handsomest thing for a bracket is the Ice plant; no bead work ever equaled its glittering foliage, and nothing but the fairy frost work ever surpassed it. It must be seen to be appreciated. It grows readily from seed, but is tender when small; after this it requires no extra care. Nemophila and Nierembergia we have used with fine effect. Begonias, if small, are also excellent; their elegant leaves should have a conspicuous place. Some of the varieties grow very rapidly; a slip of Begonia Weltoniensis, set in June, was covered with its lovely pink blossoms long before frost thought of coming.

Fuchsias are beautiful beyond description when placed at the wall, among green vines. Every flower lover knows that a blooming fuchsia is one of the loveliest flowers that ever grew. Slips grow quickly, and bloom when small, and before the end of summer will give you many bunches of their drooping jewels. A pretty way to grow this kind of plant is to fasten a crayon box to a board cut in fanciful shape, after the manner of the back of a bracket. Whenever the plant reaches its best condition, hang it upon the wall wherever you wish. This method makes all the space you have, available, and every such addition is an increase of beauty. In this manner, you may have many of the choicest plants in your piazza garden. Because they must perish with the falling leaves is no more a reason why you should not have them for your summer friends, than, because the Frost King will ruin your garden in autumn, you will have none for him to destroy. There is nothing mysterious or difficult in the culture of any of the varieties mentioned. We know by experience that these will give the quickest and greatest returns for the labor bestowed. Whether you shall have few or many of these lovely things, is somewhat a question of time, but, like many another beautiful thing in life, it is more a question of love. The surroundings of your home will in no way effect the beauty of your flowers; these are the adornings that do not need the embellishments of art to increase their charms. The roughest fence may enclose the fairest flowers, the rudest dwelling may be covered with the loveliest vines; the

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gentle rain and refreshing dew will descend upon your humble garden, and the broad, beautiful sunlight will touch and re-touch the colors of your flowers with more than an artist's skill, and in loveliest lines will trace them better than the artist's pencil, pure and perfect in their beauty. No eastern king in all his glory was ever arrayed like one of these. A single flower will often wake the tenderest memories, and create influences that will live long in after years.

Nearly a hundred years ago, a Connecticut farmer and his wife and four little girls, with oxen and sled, braved the storms of a New England winter to find a farm in the forests of Vermont. That mother could not leave all the flowers she loved behind her, so the dear, old Peonies were taken from their snowy bed, and packed with the other household treasures to adorn their new home; in early spring they were planted; they grew and multiplied, till many gardens among those green hills were made bright by their crimson blossoms. That father and mother have long since passed away; the flowers of many summers have faded above their graves, but that unconquerable love for the beautiful in nature still lives in their children to the third and fourth generation. In an eastern home there grows to-day the same roses that bloomed by the pioneer's cabin three-quarters of a century ago. The little boy who loved them then, never forgot their sweet fragrance, and when his own beautiful home was completed, he turned to the old farm for the flowers he loved in boyhood. The old log house had gone to decay; no trace of roof or hearthstone could be found, but the dear, old roses were there. He took them from the meadow and planted them by his door, where his children learned to love them, just as he had done in childhood. In a western home, where other flowers bloom and other children dwell, laid carefully away with the treasures of other years, are a few withered roses from that same rose-bush.

Long and lasting are the pleasures and the influences connected with these exquisite teachers of purity and beauty. In no way can we so successfully impress upon our children the highest appreciation of the good, the true, and the beautiful, as to surround them in their infancy and youth with the refining and elevating influences that attend the cultivation of a floral garden. The home that is made beautiful with fairest flowers and loveliest vines will become a picture in memory never to be forgotten; the passer-by will think of it in all his journeyings; the casual visitor will remember it in all lands, and the children reared in that home will ever cherish it as the sweetest spot on earth.

"The hills are dearest which our childish feet have climbed the earliest.
And the flowers most sweet, are ever those
Which our own loved ones cherished till life's close."

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HOME AND ITS HORTICULTURAL SURROUNDINGS.

J. C. PLUMB, MILTON, WIS.

Read at June meeting at Janesville.

"There is no place like home." Next to the most sacred *ties* of social life, in our highest interests and truest affections, is the *place* we call home, and these are so interwoven in the actual of earthly existence, that the contemplation of one brings the other to mind at once. It is, indeed, so difficult to separate the one from the other, that we hardly look for examples of a high order of social life but in the homestead, and that home so permanent that it may have its horticultural surroundings, in which the members of the family have a personal interest which springs from personal care and guardianship. This does not necessarily imply the possession of a quarter section of land, or of a quadruple city lot; for where a love of the beautiful in nature prevails, and there is a heart for labor and care of natural objects, there will be found some sunny corner or shady nook where a succession of foliage and flowers may be grown through the season, even in the most contracted of city lots. In the vicinity of the renowned Sunday school of John Wannemaker, in the city of Philadelphia, may be seen one of the finest illustrations of the outward adornment of a city home. On the spot where, a few years since, crime and poverty, rags and wretchedness kept close company, there are now to be seen fine rows of brick tenements, each with a little frontage of six by ten feet beside the walk, filled with plants and shrubs, mostly in pots and boxes; also many of the window sills to the fourth story brilliant with flowers. This was so conspicuous that thousands of Centennial visitors to that noted place came away impressed, with the coincidence, at least, of the two lovely sights, the blessed school and the beautiful flowers. In some of the most crowded sections of our large cities, the flat-roofed dormitories are made gay with plants in pots, showing that where the will is, there will the way be found for growing flowers.

The culture of plants and trees is a source of mental and moral improvement too much lost sight of and neglected. Plant life is full of most attaactive and impressive lessons, of mathematical exactness and perfect harmony, as well as of faith and patience. The natural faculties of form and color find their most inviting school in the symmetry and variety of flowers. The perfect adaptation of the plant, and its persevering development to its ultimate flower and fruitage, affords a valuable lesson, which points most surely to the true idea of human life, as "not all of life to live." Geology makes it evident that flowers, as things of beauty, did not have a place on this earth prior to man's existence here, but that they did appear as the cotemporary of man. Why this,

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unless they were to have some part in delighting and blessing human intelligence. And then again, what of nature has yielded more to human care and art than the improved varieties of flowering plants, so much advanced, that their old family relations are hardly to be recognized. Who, then, that loves home, and would promote its higher interests, will not avail themselves of horticultural art in its surroundings?

The outward adornments of home indicate very truly the character of the inmates. One of our own lady contributors pointedly says: "Picture a farm-house, of long standing, with walls bare and bleak, without a vine or trellis, a dreadful emptiness of front yard, and not a tree within shooting distance, except a huddled clump that is called an orchard; you will at once feel, whether you say so or not, that everything there is done by square lines, and no nonsense about it. You will infer that the head of this establishment is a neat farmer, because there is no litter; a severely practical farmer, because he is careful not to do anything that don't pay; and as a companion, about as versatile and interesting as his gate-post! His wife may not have been born that way, but she has probably grown into it. She has to be perpendicular, and so do the children. There is no graceful festooning of nature in that family. This may be a good deal to assume from a tidy but treeless yard, yet it is generally true." It is safe to say the original of this picture is not a member of any horticultural society, nor reads any horticultural paper; don't believe in posies, and thinks it cheaper to buy the meagre supply of small fruit the family use than to waste time in growing it.

In contrast with the foregoing, go with me to the home of one of our members, which, in a few years, has grown from a small wood tenement to a capacious, yet unpretentious brick dwelling, whose roof yet shelters a large family of robust sons, and whose doors and best rooms are always open to the children and grandchildren who have gone out from this home. Here gather father and mother, seven sons, a daughter and two daughters-in law, and they make the old home glad and glorious with song and anthem, under the leadership of the sire. In several rooms of this home, we find agricultural and horticultural periodicals in profusion, with choice religious and miscellaneous reading to suit their cultivated tastes. In the capacious cellar and pantry we will find the abundance with which they make us good cheer. The house is shadowed at noon time and sheltered from wintry blasts by vigorous native pines; roses and vines clamber over the capacious verandas, and close by, but not in the grass plot, is the largest collection and most luxuriant flower garden you often see. This is the home of our worthy President and his companion, whose renowned success as gardeners is only equaled by their success in making a true home, for which their children of the second generation are, even now, blessing them. I could tell you of a hun-

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dreds of other homes where horticulture is studied as an art, and where its refining influence is as apparent as in the one I have described; for such, in general, are the homes of our fraternity from the bay of Massachusetts to the western confines of civilization.

There is also a home in this city where the full realization of our ideal seems to hold good. This, too, is the outgrowth of time and patience, faith and love. The choicest of shade trees, evergreens and shrubs are amid the greenest of nice cut lawns; choice roses in profusion cluster here and there. A beautiful rock work, with foliage plants and creepers, nestles in a nook, and a well furnished conservatory occupies the warmest corner of the dwelling. The adjacent garden is largely devoted to the finest grapes and other small fruit, and the background is filled with choice apples, pears and plums. Order and high culture reign supreme in this garden, as in the household; the one a type of the other, worthy patterns which you should not fail to visit. There are doubtless other such in this city, thanks to the local society of this place, which in turn should thank their worthy President for such a pattern of a city home.

If any object to the conclusions apparent in these pictures, they cannot object to the premises, for which ever be cause or effect, the fact still remains, that we almost invariably find advanced horticulture in close union with intelligence and moral culture.

HOME SURROUNDINGS.— As to special directions, I can no more give a pattern for all horticultural adornment than for the building of your dwelling. Both must be the outgrowth of your desires and resources, your taste, and your necessities. Taste, or discernment, is a thing of culture as much as the plants we grow; hence, only general principles can here be given to aid in this work. Take the apostolic injunction, "choose the best gifts," and as a first principle.

1st. *Plant trees with the thought of permanency* ever before you. The quick growing Poplar, Negundo and Maples should ordinarily be used as alternates, to be removed when other and more durable trees have their growth well established. Such are the White Elms, Hard Maple, White Ash, and the evergreens, which you expect to endure a century. The Hard Maples which my father planted in his youth, in New England, now over one hundred years old, are monuments of his "faith and works" which have long been held in veneration by the second generation of his children. While we plant for permanency, we should also;

2d. *Plant trees for effect.* Nature furnishes our best patterns. No two trees alike, and an infinite variety of forms and foliage, with continued changes. There is no stereotype form in horticulture. These changes are first, by nature, and second, by art, and the one must follow the other. He who plants never to prune will soon have confusion and disorder. The first *effect* to be looked for and enjoyed is that of *pleasure to the planter*, in the

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growth of the tree or plant. Here is one of the secrets of horticulture which one may know only by earning it. We plant not for future effect only. Hence we plant trees and shrubs to-day which we expect to remove when in their prime, to make way for others of higher value. This holds good in all departments of horticulture. True effect lies in having just enough, no more, no less; a completeness. Abrupt, strong contrasts should be avoided; they are usually the choice of uncultivated tastes. Perfect harmony is consistent with great variety; and this applies alike to form, foliage and flowers. Landscape gardening admits of some bold imitations of nature's roughest aspects, but the ordinary lawn has no room for it. The style should conform to the area and situation. A cottage may be built for a castle, but a castle for a cottage, never. Union Park of Chicago cannot imitate great Central Park of New York. The rugged landscape of the latter would be simply ridiculous in the narrow limits of the former. So the city garden or boulevard may not be patterned after the broad lawns of the country mansion.

3d. *Plant for success.* Hence great care should be used in the selection, and in the care of what you plant. If it be shade and ornamental trees, do not choose the largest size at the expense of good roots and your chances for success. The very common and natural desire to have the lawn furnished at once, leads to the most absurd practice of removing trees of great age and size with balls of frozen earth. Not much less objectionable is the practice of importing from the native woods the trunks of trees, a quarter to one half a century old, with hardly a living, fibrous root remaining. Both practices generally prove very costly, and result in ultimate failure, and the disgust or discouragement of the planter; while one-half the amount so expended, if used in securing and preserving the roots of a vigorous young tree, at the proper season, would give most satisfactory results to the planter.

Choose varieties of known character and adaptation. The ordinary variations of soil in a given locality cause the native flora to vary greatly. Plant such varieties, in the main, as give best results under similar circumstances. The White Elm and Hard Maple are our best street trees, while the White Ash and Linden or Basswood, and the Birches, are among our most valuable lawn trees. Of our native oaks, there is none of them that I deem worthy of preservation except the Burr oak, which is certainly one of the most beautiful of our native trees. Its rustic wood, heavy foliage and mossy cups are so unique, and withal so abiding, that it is worthy of culture. It is the only variety of our native oaks that will stand civilization, and should oftener be carefully preserved when clearing up the native woods around our homes. The same may be said of the Sweet Walnut or Shagbark Hickory. The difficulty of transplanting these species with success is another reason why the original specimens of these varieties should be preserved.

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EVERGREENS.—Every country home in this climate should have a variety of evergreens near it, both for shelter and to break the dreary aspect of winter. Wide lawns should have a variety of the strong growing Pines and Spruces, while the limited space of a city yard may need only the lesser growing Arborvitæ, Juniper and Hemlock, which are always graceful in their native habit of growth, and can be sheared to any pattern or size desirable. The Hemlock Spruce is especially beautiful and valuable for narrow limits. Shrubs and climbing vines cannot be dispensed with, and in the choice of these, the old and well tried Lilacs, Syringas, Weigelia are most worthy, because most reliable, and the Ampelopsis, or Virginia creeper, Woodbine, of the climbers, for the same reason. The more delicate roses and herbaceous and annual flowering plants come next in the order of our plan, but are always in order and indispensable. The fruit trees and small fruits will never be wanting where the useful and beautiful can be so readily combined as in all of our choice fruits of orchard and garden.

THE LAWN.—Of the home surroundings, no one thing is of more importance than the lawn. Green is the every day, summer garb of nature, and grass the universal web and woof of the garment. A perfect lawn is the admiration of every beholder; yet how few enjoy its beauties, or have it continuously from May to December. As with the trees and plants, I can only give general directions.

1st. The soil should be rich and deep, with an even surface.

2d. The seeding should be thick with blue grass, and the cropping close and uniform, at regular intervals during the growing season. Every ten days, or two weeks at most, the lawn should be mown, and not allowed to run up to seed at any time. Do not sow any other grass or grains for the purpose of shading the young growth; it is a pernicious practice. The last month of the growing season the growth should be allowed free course, to strengthen the roots and give mulch for winter.

I would, in conclusion, commend home adornment with the art of horticulture, not simply for the pleasures of sense, or the net gain in improvement of real estate, but as the means of making home the paradise of the family. That the children may grow up with higher and more refined ideas of life. That they may find the homestead so much a *home* that only the calls of duty or the inevitable changes of social life shall draw them from its endearing associations; and that may ever after carry with them such pleasant remembrances of early life in the old home, that they may be constrained to go and do likewise.

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CULTIVATION AND YIELD OF STRAWBERRIES.

B. F. ADAMS, MADISON.

Read at June Meeting at Janesville.

The best cultivators of strawberries have made public their methods of cultivation, and those desirous of growing this fruit have already the means of information within their reach; yet few, comparatively, avail themselves of it. Many are disposed to raise strawberries for their own tables, but seem to think this a difficult task. At my farm, and in the fruit garden I cultivate at Madison, I have seen farmers, mechanics and professional men gazing at the fruit in its season, and resolving annually, that hereafter they would raise some on their own premises. Strange but true, farmers whose facilities for growing this fruit surpass all others, raise the least. During a residence of thirty-two years in Wisconsin, I have seldom seen this fruit on their tables. A few rods of good land, set with plants, and cultivated as well as the average farmer tends to his corn field, will furnish any ordinary family with an abundant supply. Doubtless, some who have planted beds are discouraged because they are not yielding well; cause, neglect. To grow large crops for market requires considerable outlay; plenty of manure mixed with the soil; ten or twelve thousand plants on an acre, in rows three feet apart; the removal of all blossoms as they appear the first season; the use of a horse and cultivator weekly, from May until the middle of July, after which hoes and hand work can keep the land free from weeds; the training of the runners along the rows, and the cutting off of many, as the season advance, to prevent too thick growth and to make strong plants.

Winter covering is absolutely essential in this climate; it may be put on too heavily, but this is seldom done. Forest leaves, held in place by a light sprinkling of coarse straw, or marsh hay, make the best covering I have ever used. Whatever is used, let it be put on when the ground freezes, and enough to hide the plants from view. A good crop may be taken from a plantation thus managed, by uncovering the plants as warm weather approaches, and using the covering as a mulch between the rows and around the plants; a larger crop, by taking it off, stirring the soil, and replacing the mulching. Use hands and hoes carefully until the fruit commences to ripen, and clip as many runners as practicable. An ordinary drought will not shorten the crop much on such a plantation, and with appliances to wet the mulching, it will not suffer at all. Any desirous of continuing a plantation for a second crop will do well to mow it immediately after the fruit harvest; rake off all the vines and mulching, then with a horse and double shovel plow, thoroughly stir the soil between the rows,

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and afterwards harrow across the same until the plantation presents the appearance of a newly sown wheat field. Top dress the rows with well decomposed manure, and in a short time the field of strawberry plants will look thrifty and vigorous.

In regard to the yield of strawberries per acre, it varies greatly. The fertile soil of the west will grow immense crops under high cultivation and winter protection, yet acres of this fruit are grown in Wisconsin, Illinois and Michigan that do not yield sixty bushels per acre. Many plant more than they properly cultivate, set their plants late, cover lightly, or not at all; in short, neglect some vital point, and gather a poor harvest as a result. To cap the climax some do worse; sell at a loss on the spot, or send to the poorest markets in the country, and when meager returns are received, curse the fruit dealers. Somebody must be blamed, and it is such a comfort to human nature to charge disasters and misfortunes to others than ourselves.

The methods I have mentioned will result in a yield of at least one hundred bushels per acre, and possibly two hundred. Our professional gardeners, men who raise large crops of vegetables, and fully understand the great value of manure, liberally applied, grow the largest quantity in a limited area. Peter Henderson writes that he grows less than an acre, but with rows two feet apart, and plants in hills, eighteen inches distant, he so manages that he obtains from a certain variety (Boyden's No. 30) an average of one quart to a plant. I mention him as one of a class that work for great results on a small area. Others, perhaps, may have accomplished more than he. Their success ought to teach us all the importance of thorough work and constant painstaking. It is said that the publication of remarkable yields of this fruit has a tendency to mislead many in regard to the ease and cost of producing these large crops. To such it may be well to state that they are not grown on poor soil, abounding in weeds and grass, but with all the preparation of soil, care, culture, and favorable conditions, that combined produce the best results. Henderson grows each plant in a two and a half inch pot, and covers his acre with these plants; weeds are not permitted to grow there; every stage of their growth, and the development of the fruit is watched; in short, care and attention are given these plants continually, till the harvest comes with its bountiful yield of fruit.

THE PANSY.

MRS. D. C. AYERS, GREEN BAY.

Read at the June Meeting, at Janesville.

We would invite attention for a few minutes to a flower seldom mentioned as worthy of special consideration, yet with many,

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bearing the palm for quiet, retiring beauty; no gaudy colors deck it, for so unassumingly does it take its place that even the yellow, gayest of them, is so toned down with graver hues that it seems to apologise for being there at all. "Pansies; that's for thoughts." So did the immortal bard give to this little floweret its character; so unerringly did he read the pensive beauty of its expression; and henceforth it bears the sweet, plaintive prayer in its flowery message from lover to lover, from friend to friend, forget me not; let me be ever in thy thoughts the *Floral Mizpeh.*

This little flower comes to us with many names; a childish, old-fashioned one is Johnny jump up; Germans call it step-mother; Italians, mother and daughter-in-law. Florists give it botanically, "Viola Tricolor," three-colored violet; but we call it Pansy, with a tenacity to which florists have to succumb, and supply us with seeds by our favorite name. It does not require the sanction of botany to tell us that the gladly welcomed spring violet, the "Neapolitan" and "Maria Louise," with the little yellow violet of the woods, all belong to the same class. The last named is a perfect pansy in miniature. The Heart's ease is a variety also; it peeps up at us from unexpected places; as if it knew that its big sister had usurped its place, yet appealing to us by the memories of childhood's hours, speaking eloquently of by-gone days, and time passed in gardening, not as scientific as the present, but most satisfactory. Who of us cannot remember looking for the fancied resemblance to pussies' eyes, and nose and whiskers? It was a likeness devoutly to be believed in, and unmistakably there.

The Pansy proper is surely one of the most bewitching of flowers. Always something new to be looked for in the opening of the bud; no sameness; you may think you know just what it will be, but you will probably find yourself mistaken, for it may laugh like a frolicksome child, and be something entirely different, and no science can bend it to a demure observance of rules. No flower cultivated in our gardens is more worthy of notice, no sight more pleasing to the eye than a well cared for bed of pansies, which never seem to tire of rewarding that care with blossoms the finest and best. And they are not excelled in beauty by any other, when properly planted, with due regard to soil and location. We trust some few suggestions may not come amiss in regard to their culture: The soil should be very light and rich. If at all heavy, sand should be mixed with it, for Pansy roots do not love to be clogged, or retarded in their work; neither does too dry a soil please them, for they hang their heads despondingly if heat or drouth oppress. Never do they produce as good an effect as when in beds by themselves; these may be circular, square or oblong, it makes little difference; it will keep its shape well with a little care, and bloom unceasingly. Every flower should be cut off immediately on withering, for if the seeds are allowed to ripen, the work of the plant is accomplished, and it will bloom feebly

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and sparingly, if at all. Many are afraid to cut these flowers, little thinking that in this way they can prolong the season of bloom, for the reason why they stop blooming so soon after the seed is formed is because perfecting that seed is the object of the plant; reproduction being the order of nature, the plant puts forth continual effort, until that effect is produced.

If you want good plants, by far the best way is to invest in a paper of fine, mixed seed. Poor seed will not repay the labor, while such as comes from our best florists are a perpetual surprise and delight, always rewarding us for our interest with some unexpected beauty. The location which seems the best is a northern one, where they obtain the heat of the sun in the morning for a short time, then have the rest of the day, and night, for the cool shade in which they delight. When the young plants have shown four leaves is a good time to transplant. Set about eight inches apart, they will soon cover the ground, and will bloom in July. The first year they should do well, but in the early summer of the second year they will show their brightest glory; when hyacinths, jonquils and other bulbs, violets and the early spring flowers have ceased blooming, while roses are tardy in their coming, then will a bed of pansies wake from their slumbers and eloquently thank you for the warm couch which has held them during the reign of frost.

If they are transplanted to a sunnier exposure in the autumn, early enough to have their roots thoroughly settled before winter, and just before snow, covered with fine leaves, if possible, if not, with straw, over which is placed the sweepings from the stable, they will live perfectly well, even in our northern clime. When plants treated in this way begin to show signs of weakness in blooming, it is well to remove the longest shoots, a little at a time, until all the stems are again strong and new. We have seen them growing year after year, blooming well, although not always quite as large as at first.

Our attention was lately called to some dried Pansies, which were so fresh looking and beautiful that it seems as if all should know how to enjoy them. A box was filled for about an inch with sand, perfectly dry, the Pansies placed on the sand, face down, and sand poured over them rapidly, until entirely covered, then more Pansies, and another layer of sand, and so on until the box is full. Nothing more is needed except to keep it in a dry place. With so little trouble may any one enjoy a lovely bouquet in winter, when fresh flowers are few, and not easily obtained.

We would also suggest something about the arrangement of Pansies for the house. How often do we see them crowded into a vase with larger and coarser flowers; their peculiar shape is hidden, their fair colors dimmed, and then the remark is made that they do not look well in vases; but take a dozen varied ones, place them in a low vase, with but little green, and that fern leaves, or

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something equally delicate, then lightly add sweet alyssum, candy tuft, or any delicate white flower, and see the effect; it will encourage you hereafter to look upon them as some of your choicest flowers for the parlor. A plate bouquet shows their beauty well, but is stiffer in its arrangement. Much might be added in regard to these favorites of many flower lovers, their variety and other interesting points, but time forbids. We therefore close with an urgent invitation to those who find much pure, true enjoyment in the cultivation of flowers, the one product of earth which seems as if brought from "angel's bowers," to include the Pansy in their list, assuring them that the result will be undoubted pleasure and satisfaction.

STRAWBERRY CULTURE.

C. H. GREENMAN, WAUWATOSA.

Read at June Meeting at Janesville.

Horticultural exhibitions, discussions by state and local societies, together with their publications, and the notices of the press generally, have awakened much interest in fruit growing. Information in no branch is more eagerly sought after than that which pertains to the cultivation of the strawberry, the first home fruit grown, that finds its way to our tables, quickening the physical energies, bringing health to many enfeebled bodies, staying the hand of disease, filling the household with delight, and proving a godsend to many an anxious cultivator in his efforts to obtain a livelihood. No village garden or farmer's home grounds are considered complete without the delicious strawberry. Let us look at some of the simple facts in its culture and management.

SOILS.— Almost any good garden soil will grow strawberries. Cold or wet situations are not adapted to their growth, nor can very large crops be obtained on light soils. Where the land is poor, manure must be used freely. On good, strong, clay loams the strawberry will thrive, and produce immense crops. It is only on such soils, or those made equally good, that the culture of strawberries can be made a steady and profitable occupation.

PLANTS.— One of the greatest drawbacks to successful strawberry culture is poor plants. No doubt the failure of many a beginner dates back to the time when he preferred to get his plants of a cheap dealer, at three or four dollars a thousand, than from one who had a good reputation, and took pride in sending out superior stock, well rooted, pruned, and bunches packed so that the tops were exposed to the light and air. In nearly every case, this cheap stock proves completely worthless; either the va-

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rieties are all mixed, or the plants are small and feeble, thrown carelessly into packages, without arrangement, arriving at their destination injured by heating, and often in a state of decay. I really think that good strawberry plants cannot be properly grown, dug, packed, and safely shipped, for less than eight or ten dollars per thousand. One thousand good plants, with their runners well planted, will give the grower a better stock for his bed, than three thousand obtained at cheap rates. Let beginners avoid cheap plants, undertake less, and do it more thoroughly, and the chances are that success will follow.

PLANTING.— In this latitude, spring is the only favorable time for planting. The plants will then have the advantage of the early rains, get well started, grow finely and produce a good crop the following season. Fall planting is more often a failure. The plants get injured by the winter, so as to produce no fruit the next season. To secure a crop of fruit, strong, well developed buds must be formed; these are only formed on well developed plants; late runners seldom produce fruit for this reason until the second year. Farther south, fall planting is attended with better success. Varieties differ greatly in their treatment. Some do best in hills, others in beds, or rows, the runners being allowed to cover the ground. In the garden, for family use, set them in rows two feet apart and one foot apart in the rows. A bed twenty by fifty feet will supply a family very well. By planting a bed of this size, set each spring, digging up the old bed after the second crop, planting early, medium and late varieties, the family can enjoy a continual feast for nearly two months. The same space, planted in hills two feet apart each way, all the runners kept constantly cut, will produce more fruit, but requires more labor and care than most persons are willing to bestow upon them. For market, plant in rows three feet apart, and one foot apart in the rows, allowing all the runners to grow.

CULTIVATION.— In field culture, use the horse and cultivator freely the first season; allow no weeds or grass to grow. In the garden, the work must be done by hand. Take off two crops, and clean out the bed by plowing it up.

MULCHING.— Marsh hay is the best material for this purpose. Old straw will do very well. This should be applied soon after the ground freezes; cover about one inch deep, just enough to shade the plants. In spring the plants will come up through the mulching, and the fruit will be clean and marketable. This is one of the most important requisitions in the cultivation of strawberries. It prevents the plants from being injured during warm days in winter, retains the moisture in a time of drouth, often doubling the crop of fruit, and plantations that are mulched never send dirty or gritty fruit to market.

PROFITS. — The profits of strawberry culture are not so great as many suppose; few cultivators get those full crops and large

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prices at the same time. Well cared for, they will pay a reasonable amount for the labor bestowed upon them. For family use, they will pay many fold in health and happiness to all who enjoy the luxury of fresh fruit.

VARIETIES. — After growing a large number of old and new varieties, so far, the Wilson is our main reliance. Green Prolific is gaining in public esteem, while Boyden's No. 30, Col. Cheney, Charles Downing and others, are pressing towards the front. From the experience of others, and my own observation, the indications are that they will have to stand aside for Prouty's Seedling. For family use, Wilson and Green Prolific seldom disappoint the planter, while all the others named, together with new sorts not yet tested, may do well. We must encourage more than ever the extensive planting of strawberries for family use, for thousands of country homes are yet without fruits for home use. Market growers must locate near the markets where their fruit is to be sold, and devote more attention to late varieties. Southern Illinois and Michigan flood the market early in the season, and fresh, home-grown fruit always brings better prices coming a little later. Let the nurserymen test the new varieties, and as soon as any of them come to the front, and stay there, the farmers and gardeners will soon find it out. May we not hope that soon our farmers, and all who own a garden patch, will cultivate strawberries, and enjoy this great luxury on their tables?

THE FARMER'S GARDEN — IS IT PROFITABLE?

J. W. WOOD, BARABOO.

Having been assigned to duty on this subject by our president, it strikes me that the question asked, "Is it profitable?" must receive our first attention, for in these last days men are not supposed to do much requiring capital or labor without first making themselves believe, at least, that it will pay. It is certain that the farmer must believe that his garden will pay before he can be expected to devote himself very earnestly to its culture, and it must pay, too, in the pecuniary sense, without any reference to questions of fancy or æsthetic culture; and although we may feel a sense of disappointment in dropping out all higher views, yet it is no doubt the actual question of pecuniary profit, or, in homlier phrase, of bread and butter, that moves the world. I do not believe that I am called out, in order to lay before you any process of abstract reasoning in this matter, but rather to speak from my own experience; and with this before me, I must answer most emphatically, that there is no other work done on my farm which

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I think pays me so well as that which secures to my family the fruits of a good vegetable garden. I have not the least idea that there is a person listening to me, but that regards a garden as indispensable. If there is a man in Wisconsin who does not, he will never meet with these remarks, and so we will leave him out. I will confine my efforts to the enumeration of a few of the ways in which a garden pays, and will try to show how farmers may, possibly, secure a better garden, with a longer range in time, and a greater variety of products, than many do at present, in such a way as to make them feel abundantly paid for their labor.

I think that I may safely say that there are many farmers who neglect their gardens and do not promptly attend to the things which would greatly extend its range and value. The housewife knows how important it is, and sometimes feels great impatience at its neglect. She has the responsibility of furnishing her table with good and wholesome food, and she knows that when the season of fruits shall come, her family will be in great need of them.

There is one experience which a man may have which will settle with him, forever, the question of profit in a garden, and that is, for him to experience or witness the effects of scurvy, and know that with a garden the disease is impossible. In the long winter seasons we are traveling towards the scurvy, and if they were continued a little longer we would be there. This tendency in our systems will perhaps account for some of that instinctive longing which we usually feel for fresh vegetables in the spring. With what avidity we eat green things, which a little later we would not touch.

I would not, for a farmer, recommend that style of a garden where the already overworked housewife hoes up a few square beds, in which to plant the seed, and where a few crowded vegetables struggle for a precarious existence. Not that it hurts a woman who might otherwise be in idleness to work in the garden, but we are considering farmers' gardens, and no farmer's wife, on whom the cares of a household depend, and who is expected to give her family "meat in due season," ought to be expected to do more in the garden than she finds to be a labor of love. Where the farmer does his part in good season, giving the garden a hopeful appearance, it will become a pride to the whole household, and all will do what they can to make it a success. A sense of duty towards a garden on the part of the farmer will secure a good one, but to attain the highest success in this, as in everything else in life, he must be an enthusiast. He must relish his garden so well that it is a recreation for him to work in it. I can say for myself, that I am seldom so tired, but that it refreshes me to go to work in the garden.

In some of our backward springs the interests of the farm seem to antagonize those of the garden, and it is customary with many farmers to postpone planting it until the more important crops

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are out of the way. An excellent garden is often secured in this way, but it is late, and contracts the vegetable season, while we want very much to lengthen it, and especially at the early end. The market gardener who is beaten in earliness is beat for the season. I think that the best way for the farmer is, to make his garden, as far as possible, in the fall. The ground must be plowed as late as possible, so that the heavy fall rains will not beat it down. No manure must be left on the surface as it will shade the ground and keep it from drying. There are always a few fine days in the spring in which the surface of such ground will dry out enough to let it be harrowed fine and be planted before any other work can be done. Lettuce, peas and onions can be planted safely at this time; and in the meantime tomatoes, early cabbages and celery can be started in the house and carried along until the heavy spring work is done, and the danger of frost is in a measure past.

I believe that it would pay any farmer to start a hotbed, not an extremely early one, but a later one, in which many things can be started and kept in safety until the weather is settled and the ground is warm. It might receive plants started still earlier in the house, and keep them growing until wanted. I have sometimes had tomato plants two feet high and in bloom when finally set out and had them do well. For such a hotbed a covering of cotton cloth, with boards to put over it on cold nights, and, possibly, a few forkfuls of hay to use in case of emergency will be sufficient. The chief way in which a garden pays is by furnishing good and inexpensive living. We all need relishes in the way of food. If we do not produce them we must buy them, and if bought, they add to our expenses. It is a curious fact, that people living in cities often covet, above all things for their tables, an abundant supply of fresh garden products, and do not regard expense in procuring them; while many farmers will not incur the trouble of raising them, but will purchase of the city merchant the things which go to make the relishes of their tables.

It is not unusual for farmers to say, "It is of no use for me to raise a variety of vegetables, for my family will not use them." I can reply to this on general principles, that tastes in food are, to a great extent, formed by use. Aside from possible peculiarities, children will eat, and call everything good, which their parents eat and call good before them. The great relish with which tomatoes are eaten at the present day, and which makes them a vegetable of national importance, has been acquired within a few years, and in spite of almost universal prejudice. When I first saw them in a village garden, they looked very beautiful, and I asked eagerly what they were. The reply was, "they are love apples." I asked if they were good to eat. "No," said my informant, "they are pizen." Some years passed by, and it was reported that people were eating them. One was offered to me,

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I tasted it and threw it away in disgust. Now they are indispensable in almost every family. So with celery: there are multitudes of people who have never tasted it, and many more who have tasted it but once. It is very commonly disliked at first, and yet, with use it becomes a universal favorite.

An old English proverb says, "that a person must eat it nine times before they like it." I have often employed as help farmers' boys, who showed but little relish for vegetables. Upon inquiry, it has generally proved that they were brought up by the side of very poor gardens. I regard it as a real acquisition to a person to become fond of any garden product which may be cheaply provided; thus breaking the monotony of our western pork and potatoes, and giving a healthy variety to diet and a relish to life.

I have no idea that any farmer has a just estimate of the worth of a garden. It could only be ascertained by keeping a strict account with it, charging it for services and material rendered, and crediting it with the daily returns at regular market rates. I think that such an account, properly kept, would yield astonishing results in favor of a good garden. I believe that there are but few localities where a surplus might not be marketed sufficient to cover the whole expense incurred in making it. No one realizes how much can be sold unless they have it to sell, and it ought to be the ambition of every farmer to send enough with his team when it goes to town to pay good wages for it during its absence.

For a good garden the soil must be rich and mellow. It matters but little how this state of things is secured. I propose to give to my brother farmers my own way of doing it, without indulging in theories, and trust to the discussion which is likely to follow for the development of other and possibly better methods. I laid off a plat of ground near my house just three times as large as I proposed to have in annual cultivation. I divided it into three parts; on one part I planted my garden, another part I sowed and seeded to clover, and the third part I summer fallowed by turning in a heavy growth of clover, which had received a coat of manure early in the spring, a dressing of plaster, a sprinkling of ashes, and a load of lime. As soon as plowed, I manured it again, and sowed buckwheat. The buckwheat I turned under when in blossom, and manured it lightly again, and late in the fall I plowed it again. This was for my next year's garden. This method gives me a three years' rotation in my garden. When land is once brought up, it does not need again so heavy an annual application. The advantages of summer fallowing are, that I enrich my ground with less manure, I keep it in excellent condition to work, I start in, each year, with ground comparatively free from weeds, and on such ground I have never been troubled with cut worms. I have enjoyed perfect immunity from them, when my neighbors have had great damage done, and I have attributed it to no other cause than that the miller when laying her

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eggs finds the ground bare, and so passes on to a more favorable spot, or else the larvæ perish for want of suitable food.

I plant everything in rows reaching across the garden, and make all but the rows of onions far enough apart to admit of horse culture. I leave a head land on each side in grass, wide enough to turn my horse without trampling down my vegetables, and so do not annoy myself by crushing them. I attach great importance for the farmer's garden to summer fallowing, and to the arrangements for horse culture. The latter brings it into harmony with his other work, so that when he has hitched up to cultivate his corn, he can, in an hour's time, do a great deal in his garden. If it is arranged so as to compel hand culture, it will inevitably be neglected when haying and harvesting are on hand.

With the best of soil and culture a good garden cannot be secured without good seed, and that, too, of good varieties. The most effectual way known in the world for a farmer to get such seed is, to raise it himself. If he does, he can know all about it. Such knowledge is better than any guaranty which can be purchased. A farmer can do more towards improving varieties than anybody else, because he can get the best that is offered to start with, and he will find in the product of such seed some specimens which excel all the rest, and these specimens can be used for seed. When it becomes necessary to buy, the best guaranty we can have is the character of the seller. I believe that the most outrageous swindling of the age is carried on in the sale of seeds. The customary formula now is "that these seeds are warranted to the extent of refilling the order should they not prove satisfactory." Circulars are going the rounds offering to furnish any one with seeds put up in packets, stamped with the customary guaranties, and with any name as grower, for less than half the usual rates.

It is not my purpose to speak in detail of different garden crops. Farmers are familiar with them, and to a great extent have their preferences for varieties already established. It is a great nuisance to multiply varieties beyond what is necessary.

The most common error which I have observed in farmers' gardens has been, that the plants are left too thickly in the rows. It will not do to crowd any of the root crops, without it may be onions on very rich ground. Garden seeds are necessarily sown thickly, and it is easy to neglect the proper thinning of the plants. While small they appear to have room enough, but they soon choke and become permanently injured. Where seeds are sown thickly in order to produce plants for removal, it is especially important that they should be transplanted two or three times. They must never be allowed to feel that they are crowded, and yet they may be kept so compacted together as to be easily protected from frosts or other dangers, until they are wanted. These successive removals lead to the formation of a great mass of

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fibrous roots, which seem to promote rapid growth and early maturity.

There are but two vegetables of which I wish to speak particularly, asparagus and celery. The first is well known to farmers, as but few gardens are entirely destitute of it, and still fewer that are furnished with enough to be of practical value in the family. It is the most valuable vegetable known for prolonging the season in earliness. It will give ample returns for the highest culture, and will yield the most when neglected of any plant I know. The seed must be planted in a bed, and the young plants taken care of, for a year before the bed is finally planted, but after the bed is established, the harvest is perennial. I have a row eleven rods in length which has for three years yielded a profit of four or five dollars annually, and has at the same time furnished a large family with all they wanted, at least once a day for six weeks. To prepare for the plants, I plowed out a deep dead-furrow. Scattered manure freely in it, and then plowed the dirt back, going back and forth until the manure was well mixed with the soil, leaving a furrow in which to set the plants. These I set about thirty inches apart, and down so low that the crowns were four inches below the common level. I did not fill the dirt in at once, but worked it down at successive hoeings after the plants had started. I now give it but little more attention than would be required for corn. I manure it after the frost is out in the spring, or in the summer. A winter mulch delays it too much in the spring.

Celery, on the other hand, is valuable for lengthening the vegetable season into the winter. I do not feel such unbounded confidence in recommending it to farmers as I do with asparagus, as it returns nothing with careless handling. It will in no case thrive with neglect. No lazy man will ever succeed with it. The plants may be started by sowing the seed in the open air, but it must be done very early, while the ground is kept moist by the spring rains, or else it must be frequently watered. The plants must be transplanted once, at least, and given room in a rich soil. They should be placed in the garden rows by the first of July, if possible. These rows should be four and a half feet apart, and the plants about ten inches apart in the rows. I mark out my rows with a broad nosed, shovel plow, which enables me to set the plants about four inches below the level. I never plant in the old-fashioned trenches. The ground must be rich, and deeply and thoroughly cultivated. The plants must be "handled" in due season; that is, the dirt packed around them so as to compel the leaves to an upright growth. Early in October, at the very latest, they must be "banked." This operation consists in building the dirt up on each side of the row, until the leaves are nearly or quite covered, keeping them pressed together, so that dirt will not fall among them. The agricultural papers often give full direc-

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tions for these things, and I will not repeat them; I will only add, that a person will do well, if he succeeds after two or three efforts, and yet, with some experience, the crop is as reliable as many others. There can be no salad grown which is so desirable for winter.

In respect to insect enemies, I find the most difficult ones to be the cabbage maggot and flea beetle. The cut worms are circumvented by summer-fallowing, or by planting so thickly as to permit the loss of a part, while the worms are dug out and killed, or poisoned by Paris green. This remedy is available against all enemies which eat the substance of the plants. For the cabbage maggot I am unable to suggest a remedy. The egg is laid by a small, ash-colored fly, which is easily killed, but of which many will escape. A method with insects, suggested by a member of our Farmer's club, I believe to be well worth trying. It is to wet the plants with sour milk; it will quickly dry, and so varnish the plants with a coating of animal matter offensive to vegetable eating insects. It also acts promptly as a fertilizer, and if it prove a good remedy, is eminently adapted to the farmers wants, as it can be had in abundance at the season when it is needed.

It would be superfluous to go into the details of culture for particular crops before a convention of farmers. I have tried to show how the garden work can be got out of the way of the farm work, and also how it can be made to harmonize more with it, by horse culture and the use of the same implements. The garden can also be relieved to some extent by raising some of the products in connection with field crops. Peas may always be sown in the field, and so relieve the garden of one of the most unmanageable crops which belongs to it. In respect to varieties, we want early, medium and late, and I had rather trust to simultaneous planting of these varieties than to successive plantings of an early one.

There is another thing of which I would speak; the books, and current articles on gardening in the papers, are generally prepared by successful market gardeners. They make their land very rich, and run everything under very high pressure. Their recommendations are too extreme in earliness and in lateness; in high manuring, and in laborious culture for practical value to the common farmer; he would suffer great disappointments in following their directions in the late planting of cabbages, squashes, cucumbers, carrots, or in fact of any late fall or winter crop. It is better to take advantage of the early growing season, for on common land the drouths of summer will hold things stationary for weeks. The results of all our labor as farmers are contingent, in a great measure, upon the seasons, and our gardening is no exception. A late frost in the spring or an early one in the fall, a very wet season or a very dry one, will modify all of our results, so that we will do well to aim at a goodly variety of products,

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hoping that if one shall fail, another may win; and we may be assured that good seed, rich land and careful culture are the great safeguards against all possible contingencies that threaten our success.

FRUITS AND FRUIT GROWING IN NORTHWESTERN WISCONSIN.

A. J. PHILIPS, WEST SALEM.

Read at June meeting, at Janesville.

The only consideration that induced me to prepare a paper to be read before this society, composed, as it is, of men who have been much longer engaged in horticultural pursuits, and who, by experience, have acquired a more thorough knowledge of this important subject, is, that I am fully satisfied that the only way that we can arouse and sustain an interest in these meetings is to prepare papers, deliver addresses, relate experiences. and discuss these questions as a basis for further improvement in horticulture. It is not expected the masses will experiment, hence it devolves on a few to investigate, study, labor and await results, having a two-fold object in view; first, to make it a source of profit to themselves; and second, to grow varieties adapted to our cold and changeable climate that will furnish the masses with an abundance of cheap, healthy, home-grown fruits. Fruits of northwestern Wisconsin are divided into two classes: First, the wild fruit found here, when the native red man was monarch of all he surveyed; and second, the cultivated varieties introduced since that time. Of the first, I have had much experience in gathering and eating; and of the second — well, to make a long story short, the dunning letters I have received, asking pay for trees; the poor clothes I have worn; the lectures I have received from my wife; the numberless times I have been laughed at and called a fool, when bundle after bundle of trees came to our depot addressed to me; the dead trees I have dug up, and filled their places with something I hoped to be hardier, and when questioned about the dead trees, said that the mice or rabbits girdled them; the time and money I expended for pear trees before friend Kellogg made his wonderful discovery that every cultivated pear raised in Wisconsin cost, on an average, $5 each; the one thousand trees I set, grown on apple roots, before uncle Wilcox made the discovery that apple trees, to succeed in Wisconsin, should be grafted on crab roots; the many standard trees I set and cultivated before friend Jewell, of Lake City, discovered that the Minnesota crab apples were the only safe varieties to tie to, in the northwest,

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all go to convince me that I begin to know, by sad experience, something of the second, or cultivated varieties in northwestern Wisconsin.

Speaking of the first class of fruit found growing in the northwest, I am fearful I shall fail to do the subject justice, as we are, and have been, certainly blest with a bountiful supply of wild fruit. First in season the strawberry is found in many localities; next ripens the whortleberry, which is found in such abundance in Monroe, Jackson, Juneau, La Crosse and other counties in the northwest, that every year, thousands of bushels are gathered and shipped to eastern markets, besides supplying the home demand, which is not a small amount. Then come the black and red raspberries growing spontaneously; after which comes the blackberry of which a more bountiful yield was never known than the crop of 1876; and later in the fall comes the most important perhaps, of the whole, the cranberry, which is becoming of great importance as a cultivated fruit, affording employment to thousands of laborers and forming a very profitable article of export. Wild plums of good quality are found growing in many places, the quality of some so good, that they formed the basis for quite a swindle on the honest, unsuspecting classes, who ever stand ready to buy anything, if you can make them believe their is money in it. I sincerely believe that not over one in ten of the trees sold throughout the northwest for Miner, DeSoto, and Wild Goose Plum, were either more or less than the common wild variety, and some of them extremely common at that.

This brings me to the last but not the least important class, to wit: the cultivated fruits, and as I was just speaking of the plum, I will go on with that. I do not know of any cultivated varieties in this part of the state that are succeeding or give any promise except the DeSoto, that is, if I know what the DeSoto is. I bought two trees of an agent who had his plums in a bottle, preserved, and of course, he gave his word as a man of truth that his trees would bear the same. One of the trees bears a bitter, worthless, wild plum, and the other is a very fine plum, which of course, I call the DeSoto. It ripened well last fall, though late in the season. I have some fine trees I bought for Miners, but the fruit does not get ripe, so I do not regard it as very valuable.

Strawberries are an abundant crop this season, and the fruit very fine. Prices rule low at present. The Wilson takes the lead as a market berry, but the Col. Cheney is being raised to some extent, and is certainly a fine berry. Grapes are not sure of ripening here every season; still there is much of this fine fruit raised. The Concord takes the place with grapes that the Wilson does in the catalogue of strawberries. Of raspberries the Philadelphia and Black Cap take the lead. The Philadelphia, as far as I have noticed, promises an abundant crop this season. Currants are almost a total failure, as far as my knowledge extends,

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which is very unusual for this locality, as we always count on a good crop of this fruit, let the winters be hard or mild.

While we have so much fruit that is preferred to the gooseberry, but little is said about it, except when the persistent tree peddler makes his appearance, having just discovered the gooseberry for the millions, and sells, if he can. But after selling to the grower this wonderful gooseberry, Versailles currants, pears on quince stock, or some other wonderful fruit, specimens of which he carries on a paper or in bottles, it is not always his custom to return to the same ground for another canvass, as he feels such a deep and growing interest in humanity at large, that, having supplied you, he feels it his duty to try another field, and I do think to-day, after all the failures, deceptions and swindles that have fallen on the inhabitants of the northwest, that any man, who can be found with courage enough to start in the tree selling business with his plate book in his satchel, and try to disseminate some new, and perhaps valuable variety, some old, tried variety, or some worthless, untried variety, shows himself a more remarkable person than the man who enlists and faces the enemy on the battle field, and when he leaves the many fields he has operated on here for more congenial climes, he should have a monument erected to his memory of such proportions that all passers by would notice it; for notwithstanding his faults and mistakes, there is to-day no class of dealers that the fruit growers of the northwest are under as deep and lasting obligations to for the fruit they have growing, for themselves and their families, as to the tree peddler.

But as this is digressing somewhat from my subject, I will drop him, by entreating all to treat him tenderly, and will speak of what I consider an important branch in fruits and fruit growing in the northwest; that of apples, as more money and time have been expended on this class of fruits than any other. Notwithstanding the failures and disappointments of orchardists in the northwest, still last year found a bountiful supply of this valuable fruit over this locality; even far up in our sister state, Minnesota. I carried some specimens of Alexander and Red Astrachan apples with me to the Centennial and did not see any finer or larger specimens there. I had the Rawle's Janet, Ben Davis, Walbridge, Price's Sweet, Phœnix, Utter and Clark's Orange, that fruited last year for the first time, and am sorry to say, that three of them, to wit: Walbridge, Phœnix and Rawle's Janet, after passing through the ordeal of steady cold of last winter, show unmistakable evidence that they never will bear fruit again, as they are dead. Still, I have other trees of the same varieties that will bear fruit, I think. Facts are stubborn things, and the sooner we acknowledge it to be a fact, that the northwest, as a whole, is not, and never will be a successful apple growing district, except for a few of the very hardiest varieties, the better it will be. I still

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have faith that I can make it profitable growing apples, and, I have no doubt, that there are those still farther north, in Minnesota, that will be successful raising apples, but they must have elevated and favored localities as to shelter and soil.

I have attended two of the annual meetings of the Minnesota State Horticultural Society, and found that they have a wide awake and energetic set of men, who are working hard to secure knowledge that will be a benefit to themselves, and which they seem ready and anxious to impart to others. Their society is flourishing, and from them, I first heard the theory advocated, that for fruit in the northwest, we must depend largely on the Transcendent and other varieties of hardy crab apples. But like many others, I tried hard to believe different, as I wanted apples that were better than crabs; but I find after years spent in experimenting and investigating, I am gradually, but slowly adopting, and among my friends, advocating almost their theory; although I have had, and still have strong hopes, that out of the many varieties of the Russian apples that our worth ex-president, A. G. Tuttle, and others of our nurserymen are testing, that the coming apple for the northwest will yet be found. As it stands to-day, I am of the opinion that the Wealthy is the hardiest variety that we have on the list; full as hardy or hardier than the Duchess; a vigorous grower, but it will never prove a very valuable market variety on account of its keeping qualities. I do not consider it as good a keeper as the Fameuse, which I think stands to-day at the head of the list of all the apples ever raised in the northwest, taking everything into consideration. I visited orchards in La Crosse county last season, the trees of which were set fifteen years ago, and purchased from a tree peddler, selling from Rochester, New York, where the trees came, from would be hard to tell, and found from four to six Duchess, and two to four Fameuse, loaded with fine fruit, their companions having passed away, and they, on account of the other trees failing, had been sadly misused, not mulched or cared for, used as rubbing posts for hogs, cattle and horses for years.

The Transcendent, so far, stands at the head of the list for crab apples. I know it is not a very good eating or keeping apple. The tree blights some years so bad that some nurserymen have discarded it altogether, and Harris, of La Crescent, Minn., says the fruit is so poor his hogs refuse to eat it. Still, it has furnished more fruit for eating, cooking, drying, canning, pickling, and for sauce than any other known variety of crab apple in the northwest, and so far as my knowledge goes, shows this season no signs of blight, which has not made its appearance on any variety yet. As to the other varieties of crabs, they are being thoroughly tested, and are growing in favor every year. On visiting nurseries and looking at the labels on this and the past season's setting, you can find the Minnesota (winter), Orange, No. 20 and

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Early Strawberry (summer and fall), Maiden's Blush, Aikens' Striped, and Meade's Winter, all new varieties of crab apples, are being set quite extensively; also the Wealthy. The Orange is a favorite of mine; the tree is hardy, a fine grower, and the fruit is good; larger than the Transcendent, and keeps quite well into the winter. I have lost faith some in the Pewaukee in this locality, as several nice trees died the past winter. Still, as in the dying of oak trees, there may be other causes than cold, and as I have many good trees left, I shall continue setting that variety on account of its long keeping qualities. But with my small amount of experience, when I consult with a farmer about setting an orchard on the rich, porous soil of our valleys, my recommendations are very limited, say four to six Duchess, six Fameuse, six Wealthy, four Utter, four Transcendents, four No. 20, four Orange, and about ten of other, selected varieties of crabs, and tell him to buy the balance of his apples, as forty to fifty good trees are better than five hundred poor ones, and will receive much better care, which, at best, is not any too good.

The fruit crop the present season will be very small, owing to a hard freeze in April, after the fruit buds had begun to swell. Even wild plums and currants show no fruit; will be a few Transcendents and Duchess, and that is about all. But trees though backward in the spring, are doing fine this summer. Of the trees sold through this section, dug this spring, I think not half have grown, owing I think to the steady cold of last winter, from which they never recovered. I am now cultivating some three thousand trees in the orchard, and they promise well. My location is a clay, limestone soil, on a high ridge, with every exposure but western. The only pear trees I have that promise to bear fruit are the Flemish Beauty, though I have set perhaps fifty other varieties. Fine Flemish Beauty pears were raised in this county prior to 1872 and 1873, but since that, they have quit, probably owing to Kellogg's discovery, having come to the conclusion that it would be hard to find market for the fruit at that cost, when other fruit was plenty. Still, while there is life there is hope, and when I hear our worthy president tell his story of the Brown county pear orchard, and then look on the state map and find that it is about forty miles farther north than I am, I have great hopes of raising pears. I sincerely hope the day is not far distant when varieties will be introduced that will make the prospects of fruit growing in the northwest look much brighter than they are at present.

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OUR GIRLS.

MRS. IRENE H. WILLIAMS, MADISON.

Read at June Meeting, at Janesville.

How often in reading the many magazines and papers devoted to home and household topics, do we find the question asked: What shall we do with our boys? A very necessary thought, but why does not some one ask the same in reference to our girls? In these last years of the nineteenth century, a great revolution in opinion has taken place respecting the education of girls. The many avenues formerly closed to them in the way of opportunities for self assistance, are now open, until there are few of the callings or ways of obtaining a livelihood, before conceded to man alone, but what a woman can fill, if she has the ability. This is as it should be; why should a boy receive all the advantages that fit him for self reliance and the care of others, when he is generally thought by nature to be already better fitted for this, and a girl who is just as likely in this uncertain life to need such knowledge, be educated only with the idea of obtaining a superficial acquirement of the languages, music and other accomplishments, to satisfy the criticism of loving friends, and then drop all when school days are over? A few years will obliterate all from her mind, for her studies were not directed with the view of becoming thorough mistress of any one particular branch, and with no thought of any necessity arising when she would be glad to make practical use of them. The cruelty of such a fitting for life must be apparent to any one who gives it a second thought. Of course we can not, in our prosperous days, realize that misfortune can come to one of ours, those dear ones for whom we are striving, laying up treasures of wealth, shielding them from all anxiety or responsibility, gratifying their every wish and want, and we dread to open their eyes to the other, the shady side of life. Is it justice to them? If the hour of misfortune never visits them, such preparations can do them no harm; should they need it, how thankful will they be to take the helm and guide their bark triumphant through the storm. Too often the first realization of the necessity of self assistance comes when the saddest of all sounds smites the ear, the clods of earth falling on that which holds all most dear, the form of the one that stood between them and care, responsibility and want. They still live, for life cannot be laid aside to be resumed when the shadows have passed. Perhaps many are looking to them for the needs of life, when it is almost too late to learn, for then time is precious.

We daily see the changes that are taking place, the uncerta ty of riches and the comforts their possession can give. One may be born surrounded with luxuries, but will they always last? A

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father or husband may die, and with them depart the income; sickness or reverses in business, yes, there are many sad ways to bring want to the door. If the mother, wife, or daughter have not prepared for some such crisis in girlhood, what shall they do? Woman is not an idler or drone from choice, it is mainly the mistaken kindness of parents that at times causes her to appear so. Noble girls! Why, the land is full of them. Indeed, they are not of the past. There are many who feel themselves a loving burden on an overtaxed father, but there seems no congenial work into which they can enter heart and soul; the father struggles on, and the girl waits for someone who is to make life all sunshine and bear all responsibilities, as the father has done before. This dream is only occasionally realized, and the burden must yet be taken up further down the road.

A boy, if he shows a preference for any particular study, is generally allowed to become master of it; then why not deal as fairly with the girls, who are just as likely to need it. Do not bring them up with the idea that they are vines and must cling for support and protection. Even vines often gain strength by climbing alone. Whatever they show an aptitude for, let them become perfect in it, let it be teaching of the English branches, music, bookkeeping, telegraphy. reporting, or floriculture.

Some from earliest infancy exhibit a fond love of flowers and plants. When old enough to visit the woods, notice how they come, bringing not merely the blossoms, but roots and all, to make a home garden of their own. How tenderly do they watch, and with what joy do they greet the first blooms. Encourage this love; give them a spot to call their own; seeds, plants, and tools to work with; teach, or have them taught their habits and growth; let them learn thoroughly the methods of propagation and culture the many varieties require. These seeds of knowledge may some day mean bread. To me there seems no work more beautiful, more elevating, or more refining. It brings out all that is pure and good in one's character; it fills life with beauty, and prepares one for the transplanting to the garden of fadeless bloom. Can one sow a seed and watch its growth without having in mind immortal life?

The work of floriculture seems particularly adapted to woman; there is so much that her gentle hands can do more carefully than man's stronger touch, such as transplanting of seedlings, potting of rooted cuttings. Then there is the care of the propagating benches, budding and taking of cuttings. In the arrangement of flowers, and all the varied designs of floral decorations, woman's idea of harmony of color is naturally better than that of man; and in every way they seem much more fitted for this work. If this employment was known to be open to women, how many would lay down the toilsome needle, the tiresome ledger, leave the dusty, bustling stores, factories and mills, to lead a life of health, beauty and moral improvement.

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The more intelligence brought into any work, the greater is the advancement made; one can rise to distinction in this work as well as any other. Intellect will tell, and if directed with a great love for the undertaking, success must follow. Those who have read "My ten rod Farm, or How I became a Florist," may see what a woman can do to keep the guant wolf from the door. A small green house opening off from a room, say a kitchen, could, during the early winter and spring, be kept sufficiently warm from the stove, and the steam arising from the cooking preserve the needed moist atmosphere, and it might be well warmed at night, when not bitterly cold, by the heat of an oil stove, provided the green house was shielded from north and west winds and built partly under ground. Here could be grown many varieties of plants not requiring hot house temperature, also early vegetables, lettuce, radishes, parsley, and plants of tomatoes, cabbage, peppers, cauliflower and celery. These things would always find ready sale, for even in large cities the demand for early, fresh, home grown vegetables, is seldom met. Small fruit culture has been recommended for a woman's work. With the exception of strawberries, they could easily do it and find the work light; but the necessity of constant stooping would render it too laborious. Still one must not undertake it with the idea it requires but little care, for never would mistake be greater. "As ye sow, so will ye reap." The care of a vegetable garden, after it is put in order in the spring, could be made, with the aid of children, a good support, and give to the tired, house bound woman a new lease of life. We do not wish to crowd out those already engaged in the work, for there is still much left for them that we can not do. Who, of our many prominent florists, will open their doors and teach "Our Girls" this truly beautiful and appropriate profession?

WOMAN'S WORK IN HORTICULTURE.

MRS. H. M. LEWIS, MADISON.

Read at June meeting, at Janesville.

I wish to have it clearly understood that I am not an advocate of woman's rights in the full sense of the word, and I have no admiration for a manly woman, but I do advocate that woman has the right to do any and all things for herself and family that she can do with dignity, and without losing any of her womanly delicacy. I am sure that the great majority of women would not enter public life were its doors fully open to them; but I believe that the unmarried woman who pays taxes and has no protector,

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has the same right to the ballot box if she desires it, that the man has who uses her money for public benefit.

"The woman's cause is man's; they rise or sink
Together, dwarfed or God-like, bond or free."

Half the human race are women, and the true American woman, upon whom nature has set her seal of royalty, is now acknowledged to be the finest specimen of woman kind upon earth, and she is now fully awakening to her true interests, and great results must follow. Perhaps education and prejudice may retard her work, but the time is not distant when men will "fling around her conquering footsteps more lavish praises and perfumed flowers than ever wooed with intoxicating fragrance the fairest butterfly of the ball-room or opera."

No healthy woman, from Queen Victoria down to the beggar at the door, has a right to live with nothing to do. God never put a human being on earth to waste a life, or indeed a single hour.

"A creature out of work, is beggary
To Thee I come,
O King of kings, find room and use for me
In Thy great home?"

Time spent in healthful rest and recreation is a necessity, and of incalculable benefit to all workers, and they are the only ones who know how to enjoy it. I would that all women were pleasantly situated in homes of their own, but such is not the fact, for one-fifth of womankind must be self supporting; and a question of great importance before us at present is, how shall we make our dependent, respectable women more healthy, respectable and self sustaining? Many women, particularly widows with children, are feeling the necessity of having a more agreeable work, and their thoughts are taking a new turn. They are reaching out to new fields to claim, and conquer, and may God help them, is our prayer.

Medical statistics show us that the average healthy life of a woman running a sewing machine is but four years. To be sure, she lives beyond that time, but in most instances her life is but a dull blank, for she can do little but suffer. Many noble women are sitting down in sorrow and objectless grief, leading dull, indolent lives, nursing every ache and pain, who are dependent upon relatives for their support upon whom they have no claim, because they feel that they can do nothing for themselves. To such and all others who feel in their hearts that they ought to have some work to do, we would say, take up the work of horticulture, if you have a natural love for it; if not, do not attempt it, for you will most likely fail. But if you love it so well that you can identify your life with it, you cannot fail of success. Some

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women have a natural talent for fruit growing and market gardening. Both fields are open to women, and some of the very best conducted farms in the west are managed by them. One lady in the south, who was formerly worth a million dollars, is now supporting herself finely by the cultivation of the castor oil bean; others are supporting themselves by cultivating nuts and various kinds of herbs. A fair degree of health is warranted to most women in the horticultural work, for many physicians prescribe digging in the earth and out door exercise for the cure of consumption, dyspepsia, and all nervous diseases.

The majority of women have a natural love for flowers, and find but little trouble in cultivating them successfully for their own pleasure, and I see no reason why they should not succeed as professional florists, as the art has now become so simplified that they will be enabled, after becoming fairly established and giving to it a few months careful study and experience, to succeed, if they have a natural bent in that direction. If a woman succeeds as a florist, she can do what she cannot in many other fields; she can command the same price for her produce that a man can, and that is most encouraging. If a woman wishes to engage in this business, perhaps it would be the better way to begin carefully, learning by experience, step by step; doing a small business at first, saying in the meantime to her friends that she expects them to patronize her liberally, and she will surely get the patronage, if she works in the right way, as the demand for flowers and vines is largely on the increase; so much so, that no home is considered furnished without them.

We would suggest to the amateur a careful perusal of Henderson's works on floriculture, or some of the other valuable books on the subject, in order to begin with the very best ideas. If one wishes to begin on a cheap basis, we would suggest sending to Peter Henderson, of New York, or to some other reliable florist, for the extra catalogue of cheap plants, that he sends out in February and March. These plants are sold at greatly reduced rates at that season of the year, to make room for the new varieties that will be forthcoming in the spring. Fifty dollars will nearly stock a medium sized green house with the standard varieties of roses, verbenas, geraniums, heliotropes, coleus, etc. The new and rare varieties cannot be expected at such low rates, but from a small beginning large results may be reasonably expected, if the valuable annuals like pansies, mignonette, sweet alysum, etc., are added to the collection. Each week will make a change in the size and value of the plants, and the progress will be onward, from good to better, from better to best.

But few women have as yet taken up floriculture as a business in the west, but in the east many are engaged in it, and not a few have secured fortunes from its profits. One of the most refined ladies we ever knew was a florist. She managed, with the as-

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sistance of a young German lad, three good sized green houses. The man did the coarse, heavy work (a strong German or Norwegian girl could fill such a place if necessary), lifting heavy burdens, making fires, marketing the plants, etc., while she used the brain force to keep everything in fine running order, taking upon herself the personal supervision of each house. One house was kept for the hardy plants, just above the freezing point. In this was found varieties of roses, pansies, daisies, sweet alysum and many others for daily cutting. The second house was kept at about 60°. The third at tropical heat. She bore the responsibility of buying, selling, shipping, slipping, repotting and preparing plants and bouquets for market. She often repotted three hundred plants in a day, with her own hands, and when evening came, was the life of a charmed circle who admired her for the beauty of her cultivated mind, fine musical talents, and kind, loving heart. She entered upon her work with the greatest love and enthusiasm for it. Often when she was admiring nature's wealth and varieties of colors, and breathing the very odors of Heaven, she would exclaim, "You little know what beautiful thoughts come to me out of the ground, as I study the fathomless mysteries of plant life." Her work was not all toil; it was truly an inspiration. Women so happily and healthfully employed, are seldom sick. One such woman worker is doing more for the woman's cause than a score of Susan Anthony's. We are proud of such women, and we have thousands of them all around us. Mrs. Little, of the Blind Asylum, Mrs. Harvey, of hospital fame, and Mrs. Lynde, who has done so much to relieve suffering in our poor houses and jails, are representatives of this type of women in our own state, and our good President Hayes' wife, of national fame, whose bright light shines over the whole world, is proving that the "present epoch is initiating an empire of the higher reason of arts, affections, aspirations, and for that epoch the genius of woman has been reserved," proving the old Oriental proverb, "that every book of knowledge is implanted by nature in the heart of woman," to be true; scattering to the winds the pernicious and absurd saying of Voltaire, that "Ideas were like beards; women and young men have none."

Woman is emerging from the gloom of the dark ages into glorious light. She is like the famished plant in the gardener's hand. It seemingly droops and withers without hope, but when he gives it the elements of growth, rich soil, dew, rain and God's sunshine, it expands into a plant that sends out its beautiful foliage and rich blossoms, that will fill the air with fragrance and beauty, and the "world's autumn" with rich fruit.

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CRANBERRIES IN WAUSHARA COUNTY.

E. W. DANIELS, AURORAVILLE.

Read at June meeting, at Janesville.

It has been said that horticultural writers are inclined to run to extremes, so you must pardon me if it should prove true in this case, or if, on the other hand, I should repeat facts which were mentioned at our last annual meeting.

As it has been my lot to reside for thirty years in the greatest cranberry town in the state and in the immediate vicinity of the best marshes, had I given a closer attention to the science of cranberry culture, perhaps I should have better met the wishes of those who requested me to write an article on this subject.

The two species of cranberry indigenous to our country are the large, *vaccinum macrocarpon*, and the small cranberry, *vaccinum oxycoccus*. It is to the larger species that I will confine my remarks, the smaller being seldom gathered here for market. The *V. macrocarpon* is divided into three varieties, the Bell, Bugle, and Cherry; the first mentioned being the largest and most common in this locality. The cranberry, in its natural state, is mostly found in marshes containing rich deposits of peat, growing among short wire grass. Heavy grass will choke out the vine the same as wild sage or other noxious plants. Years before our marshes were improved, they were found to contain from four to sixteen feet of alluvial soil and water, with an underlying bed of sand and bluish clay. As early as 1850 the Indians picked the wild berries in these swamps, then considered worthless, which were so soft that it seemed as though they would not sustain the weight of a man, and could be visibly shaken to a distance of three or four rods.

The cranberry region in this locality, lies mainly in the town of Aurora, and includes the following important marshes, viz.: Carey's, Sackett's, Walters', Rounds & Co.'s, and Spencer's; the latter formerly known as the "Mason marsh," with several smaller and outlying portions in the adjoining towns of Warren, Leon and Rushford; so that the title "Berlin cranberries" is misapplied." "Nar'y a one" ever grew in Green Lake county, though most of our proprietors have removed to, and ship their berries from Berlin. One of the most important of these cranberry marshes, is the "Carey" marsh, considering its extent, productiveness and facilities for flowing and drainage. Other marshes have been more remunerative during the last two years, owing no doubt to their fortunate escape from the depredation of insects. Formerly, the drainage and flooding was defective, but this has been remedied by clearing and digging of fifteen miles of ditch, and by the con-

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struction of a canal one and one-fourth miles long from their mill-pond at Auroraville, at a cost of $7,800, including labor and right of way. Lying around this large marsh, near to and drained by the Willow creek, are other cranberry meadows, owned by different persons, but a description of the principal one will answer for all.

The Carey Bros. are the proprietors of 280 acres, the best portion of which was purchased for hay land, as it lay adjoining their farm. A few berries were gathered from it in 1855, but being sold for 50 cents per bushel, it was for a while almost forgotten. In 1860, I purchased some of the marsh for cranberry purposes, but after picking, barreling, and shipping to New York, I concluded that it was not profitable, and soon after allowed the land to revert to the state. During the latter part, and soon after the war, the increasing demand for this fruit encouraged more adventurous spirits to embark in this enterprise, and the result has been that these swamps or bogs, after being drained, began to yield large crops, and were soon valued at thousands of dollars, and their owners, at first in very moderate circumstances, soon found themselves possessed of affluence. The crop was the largest in 1872, when over 6,000 barrels, or 18,000 bushels were gathered from this marsh alone. The price per barrel also then reached its maximum, $11 here, and $13 in Chicago. The pickers receive seventy-five cents per bushel for picking; the largest amount picked in one day being 2,600 bushels, by 2,400 pickers. The buildings near the marsh, now have the appearance of a deserted village, but when a full corps of pickers are on the ground, the scene resembles a crowded street in some large city. This village consists of four storehouses, two stories high; two, thirty by forty, the third thirty by ninety, and the fourth thirty by eighty; two stores, each ten by sixteen, and one and a half stories high; fourteen new buildings for pickers, same size as the last. All these buildings are neatly painted, and present an attractive appearance. Besides these, they have about a dozen log and bark shanties for Mr. and Mrs. Lo and family; in all a capacity for 2,000 pickers.

The pickers are not selected with regard to caste, there being representatives from nearly all nations, tribes and languages, and from nearly all the modes and walks of life; but it is from the poorer class that the ranks are mostly drawn; good order prevailing here to such a degree that in fact all may meet in the great republic of cranberry picking. The rail cars, described in a former volume, are used here greatly to the aid of the pickers. The sage, described by Mr. Floyd in the same volume as propagated by stolens, is also propagated by seeds, and by the ascending branches from the nodes of stems under ground, as in the case of knot grass. Flooding has a tendency to destroy this noxious plant, to some extent, at least; it limits it to clumps or patches where the water is shallow, or the marsh slightly raised above the

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general level, while in very dry marshes it spreads evenly over the surface. It was nearly all pulled by hand three years ago, at a cost of $1.50 per day, but the remains of the roots in the soil, and the seeds grown on adjoining marshes, still have a tendency to reproduce it.

By far, the greatest enemy of the cranberry is the vine or "fire" worm. These worms commence to feed upon the tender growing shoots of the plant, drawing the leaves together with their webs. They destroy the fruit to the greatest extent in early June, as they are hatched about this time from eggs deposited the previous season. They soon pass into the pupa state, where they remain about two weeks. The method pursued on this marsh differs but little from that on others. As soon as the crop has been secured, and necessary work done, the marsh is flooded until about the 20th of May. This prevents the vines starting too early, or the eggs of the fire-worm moth from hatching. At the afore mentioned time the water is lowered two or three inches below the surface and maintained at that stage until a week or two before gathering the fruit. In the meantime, if the insects make their appearance, a cool day is chosen and the marsh is flooded, care being taken to prevent scalding on drawing off the water.

Another of the more important marshes is the one known as the Sacket marsh. It is second to none in extent, but has not the facilities for flooding, the water being derived from the rainfall and spring freshets. It is not as free from sage as the other marshes, but has suffered less from insects. Mr. Sackett has but few buildings for pickers, though he has the best "cranberry house" in town. His pickers are nearly all from Berlin, and travel to and from that city.

Before this part of the country was fully settled, Mr. S. A. Sacket, who resided in Chicago, instructed some agents to purchase land for him in Wisconsin. They did so, but invested in the cheapest and poorest land they could find, for the purpose of defrauding their employer. When Mr. Sacket came here he found his land a vast shaking bog, 700 acres in extent, covered with tall seeds, wire grass, and here and there a few scattering cranberry vines. He set to work to improve the marsh, and the result proved most valuable to the owner, as the marsh produced enormous crops for several years.

Round's & Co's have a marsh of 240 acres improved by ten miles of ditching; their buildings have a capacity for 800 pickers. H. Spencer runs about 160 acres, improved by eight miles of ditching, and has three-fourths mile of track for cars. He has his buildings prepared for one hundred pickers, but is intending to erect more this summer. J. D. Walters has about forty acres of good marsh. There have been less failures in crops on the three marshes last named than on the other marshes, and they are more free from sage and other noxious plants. There are several smal

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marshes lying around these larger ones, which I have not time to mention.

In 1872, there were raised in this vicinity 14,400 barrels, 43,200 bushels of berries, furnishing employment to 10,000 pickers. The yield was so great that the best forty on "Carey's," produced 21,600 bushels, or 540 bushels per acre, the depth of berries being three or four inches, nine or ten on each spur. Of the outlying marshes, in Warren, the most remarkable is the Donnelly marsh, ten acres of which produced 1,100 barrels, and John A. Williams, who resides near Pine river, town of Leon, has set out vines on a marsh, flooded it, and has made a good cranberry meadow.

ENTOMOLOGICAL NOTES.

STRAWBERRY LEAF ROLLER. — For two or three years past this pest has increased with great rapidity, and done much damage in different portions of this state, and unless energetic measures are taken to prevent their increase they will make our strawberry crop very uncertain. It has been the experience of those engaged in strawberry culture in other western states that "it is impossible to raise strawberries where these insects are thick." We are indebted to Prof. A. J. Cook, of Lansing, Michigan, for the cut of this pest, and also that of the strawberry worm.

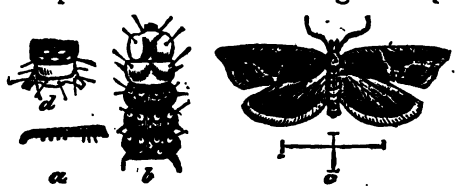

FIG. 4. STRAWBERRY LEAF ROLLER.

a, Larva, natural size; *b*, Head and first segments of body magnified; *d*, Last segment; *c*, moth, hair lines indicate natural size.

As described by Prof. Riley, the larva of the strawberry leaf roller (*anchylopera fragariæ*) when fully grown is less than a half inch in length, of a color varying from a light yellowish brown to a dark olive green or brown; its body is soft and somewhat transparent; its head, a shining yellowish brown, with dark eye spots on each side. The first segment of the body is the largest, and they slightly diminish in size to the last, which has two black spots on it. It has sixteen legs. The first brood of these worms appears in June, and feeding upon the pulpy substance of the leaves, causes them to roll up, within which the worms spin a lining of fine silk and change to the pupa state. They become moths the fore part of July. The head and the thorax of the moths are of a reddish brown; the wings are also brown, streaked and spotted with black and white; the hind wings are dusky. The wings are very broad at the base, measuring nearly half an inch in width,

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when spread. After pairing, the female deposits its eggs on the plants, and in a short time the second brood hatches out, which reaches its growth toward the close of September, when it goes into the pupa state and there passes the winter.

REMEDIES. — Doubtless it would be advisable, where they are very destructive, to plow up the old beds, set on a new site and with plants not infested with the pests. Mowing the vines soon after the fruit is harvested, rake off the leaves, and when dry burn them. Mr. Stone, of Fort Atkinson, has been successful in preventing their depredations by sprinkling the vines in the spring, as soon as the leaves have made a fair growth, with Paris Green, (using a teaspoonful to a pail of water), and repeating the sprinkling a week or two afterwards. Treated in this way, his vines were nearly free from them the past season. Going over the beds once or twice a week and picking off the curled leaves by hand and burning them will keep the worms in check, where not very numerous.

THE STRAWBERRY CROWN BORER, *Analcis fragariæ*, is another foe of the strawberry, and causes much damage in some sections, especially in old beds. "The larva," according to Prof. Riley, "hatches in June or July from an egg deposited in the crown of the plant, when it commences to bore its way downward into the pith. Here it remains till it has become of full size, working in the thick, bulbous root, often eating through the more woody portions; so that when frost sets in, the plant easily breaks off and is thrown out. The grub is white, with an arched back, and tawny, yellow head, and when full grown measures about one-fifth of an inch. It undergoes its transformations to the pupa and perfect beetle state in the root. The beetle makes its appearance during the month of August; is about one-sixth of an inch in length, of a chestnut brown color, and marked and punctured as seen in *c*, Fig. 5. The only remedy seems to be the total destruction of the plants and beds infested. The frequent turning under of the old vines and renewal of the beds will doubtless do much to hold in check this and nearly all insects preying on the strawberry.

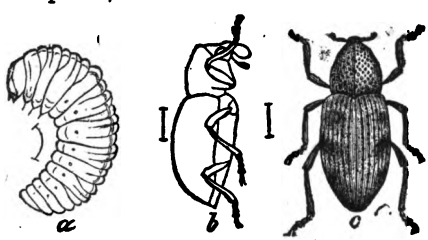

FIG. 5. STRAWBERRY CROWN BORER AND BEETLE.

a, grub; *b*, side view of beetle; *c*, back view; hair lines denote natural size.

THE STRAWBERRY WORM, *Emphytus maculata*, belongs to the saw fly order. The perfect fly is of a pitch black color, with an oval abdomen, having two rows of dull, white lines. They may be seen flying about the vines at the beginning of May. The female, in laying her eggs, punctures the stem with her saw or ovipositer, and deposits them within. In about two weeks they hatch, and the presence of the worm is discovered by small holes

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eaten in the leaves. Their color is dirty yellow and gray green, the head of a darker color than the body; they have twenty-two legs, and when full grown, are about three-quarters of an inch long. When not feeding, they rest curled up in a spiral form, on the under side of the leaf; on the least disturbance, they fall to the ground. They moult four times before reaching maturity, then they descend to the ground, form a weak cocoon of earth, line the inside with gum, and change to the pupa state, from which the second brood of flies are produced in the latter part of June and the first of July. The second brood of worms is rapidly developed, and in the fore part of August they go into the ground and form their cocoons, where they remain till the middle of April following, and then appear as flies, again to repeat the work of destruction.

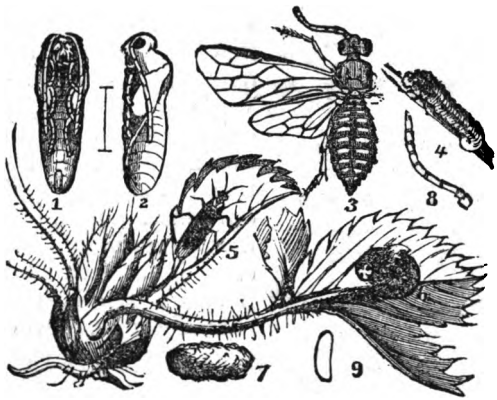

FIG. 6. STRAWBERRY WORM.

1, 2, Pupa; 3, perfect fly, magnified; 4, Larva; 5, perfect fly, natural size; 6, larva at rest; 7, cocoon; 8, antenna enlarged; 9, egg enlarged.

The remedies most commonly used before the fruit has set, or after it has been harvested, are White Hellebore and Paris Green in a dry powder, or in solution, and applied in the same way as for the currant worm or leaf roller. When the worms have dropped to the ground, they may be destroyed by a mixture of warm water and kerosene poured on to them.

The MAY BEETLE, *Lachnosterna fusca*, is regarded by many as the most destructive pest of the strawberry that we have. The larva of the May beetle is well known as the white grub worm. The beetles themselves, often, are so numerous as to do much damage in the destruction of the foliage of the trees, but by far the greatest loss is occasioned by them in the three years in which they remain in the larva state, by destroying the roots of the plants. The loose and highly manured soil of the strawberry bed is especially adapted to their development, and working underground it is very difficult to destroy them. By frequent stirring of the soil, many of them will be exposed to the attacks of the fowls and birds, who are our most efficient helpers in their destruction. No opportunity to kill the beetles should be allowed to pass unimproved. As they are attracted by lights at night, many may be destroyed by their aid. They usually cling to the foliage of the trees during the day, and a slight jar will cause them to fall to the ground, and then they can easily be destroyed.

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PHYLLOXERA.— This destructive insect is a native of this country, and has doubtless infested our wild and cultivated grape vines for a long period. That its presence has not been marked with the destruction that followed its introduction to the vineyards of Europe is doubtless owing to the greater constitutional hardiness of our vines, in part, but more especially, because it has been held in check by a host of parasitic foes, developed by its long continued existence here. Much damage has resulted in certain localities from its attacks, and should some misfortune overtake our friends the parasites, or by improper culture, we should weaken the constitutional vigor of our vines, the ravages of this pest may become as general and as severe as it now is in Europe. Some of our entomologists and horticulturists attribute the mildew and rot to which our vines are now subject to a weakened vitality caused by the attacks of the phylloxera, and it is for the interest of every one engaged in grape culture to become familiar with its habits, and to watch its development, and if found preying upon their vines, to seek out, by experiments, some remedy. The accompanying cuts were prepared by Prof. C. V. Riley, state entomologist of Missouri, and the description is mainly taken from his article prepared for Johnson's Cylopædia, and from an address by Prof. A. J. Cook before the Michigan Pomological Society.

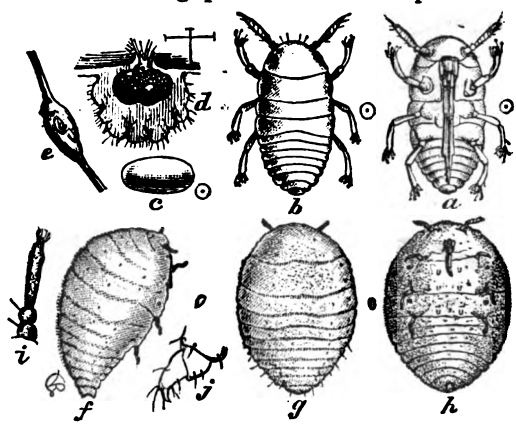

FIG. 8. LEAF FORM PHYLLOXERA.

a. b. newly hatched gall louse; *c.* egg; *d.* section of gall showing mother louse and eggs; *e.* swelling of tendril; *f. g. h.* mature gall louse; *i.* antenna; *j.* foot enlarged.

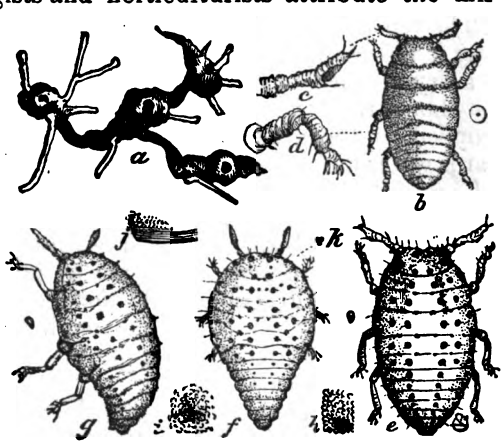

FIG. 9. ROOT FORM PHYLLOXERA.

a, swelling of roots; *b*, young root louse; *c*, antenna; *d*, leg; *e*, *b*, *g*, mature lice; *h*, *i*, *j*, magnified portions of skin, tentacles and joints; natural size denoted by small figures at the side.

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The species is found in two forms, the leaf form represented in Fig. 8, and the root form, seen in Fig. 9. The leaves of the vine affected by the leaf form are covered with galls, or cavities. On opening these galls, the mother louse, of a dull orange color, will be found busily at work laying her eggs. These eggs begin to hatch in six or eight days, and the active little lice (*a. b.*) issuing from the mouth of the gall, spread out over the tender leaves of the vine and commence pumping up the sap, and causing new galls to form, and filling them with eggs, as their mothers did before them.. As there are five or six generations in a season, and each egg develops into a fertile female, the increase is prodigious. As yet no males have been discovered among the leaf lice,

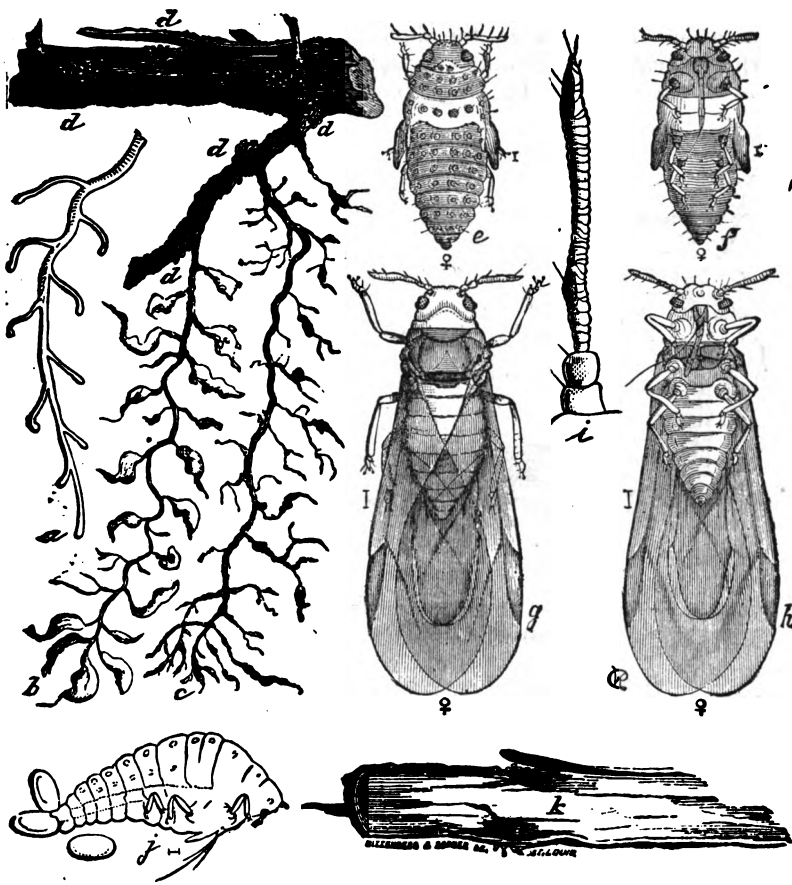

FIG. 10.

a, healthy root; *b*, root on which lice are working, swellings caused by their punctures; *c*, roots deserted by lice and showing decay commenced; *d*, *d*, *d*, lice on larger roots, natural size; *e*, *f*, female pupa showing wing pads; *g*, *h*, winged female; *i*, magnified antenna of winged female; *j*, wingless female laying eggs; *k*, punctures of lice causing roots to decay.

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nor do any of them have wings. By the end of September the galls are mostly deserted, and the lice of the last brood attach themselves to the roots and hibernate there.

But little damage is done by the leaf form compared with that of the root form. The newly hatched lice of the root form (*b*, Fig. 9) are precisely like those of the leaf form; but, as they develop, rows of tubercles appear, where only very minute hairs were seen in the leaf form (*e*, *f*, *g*, Fig. 9). In the winter the young lice may be found adhering closely to the roots, but as vegetation starts in the spring, they become active, rapidly increase in size and soon commence to lay unimpregnated eggs; no males are yet seen. These eggs bring forth females, which in their turn develop and lay unimpregnated eggs, and this process goes on for five or six generations in the season, the development increasing in rapidity with the heat, but the number of eggs diminishes with each brood; those of the first brood laying from two to three hundred each.

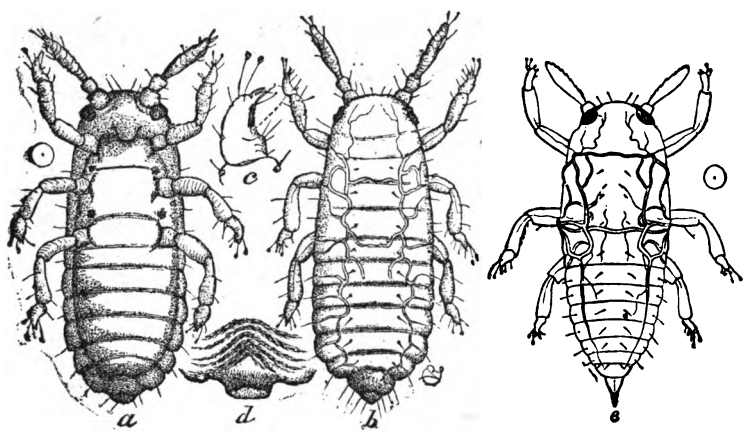

FIG. 11. MALE AND FEMALE PHYLLOXERA.

a. b. female; *c.* foot enlarged; *d.* joints as they appear after oviposition; *e.* male.

"In July, some of the individuals show little wing pads at the sides, and begin to issue from the ground and acquire wings. These winged lice become very numerous in August, and continue to appear in lessening numbers until the leaves have all fallen. They are all females, but only lay from three to eight eggs each. These eggs are of two sizes, and are also unimpregnated; they are laid, by preference, on the under side of the tender leaves, attached to the down; they gradually increase in size, and in about ten days develop, the larger into females, the smaller, males (*a*, *b*, *e*, Fig. 11). These individuals are born perfect, though without mouth, or any other function than that of reproduction. Balbiani has discovered that some of the females that do not ac-

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quire wings, but always remain on the roots, also lay the few different sized eggs from which these mouthless males and females are hatched. The sexes pair soon after hatching, and on the third or fourth day, the female lays a solitary egg and then dies. This egg is more elliptical in form than the others, and soon changes to an olive green color. It is never laid on the leaf, but on the wood, under the bark, or in some sheltered situation, or on the roots under ground. The young hatching from it is the normal, agamous (unmated) mother, which, with increased vigor and fertility, lays a large number of eggs, from two to five hundred, and commences anew the virginal reproduction, and the cycle of the species' curious life. The impregnated eggs, laid early in the season, doubtless hatch the same year, though some of the later deposited ones may pass the winter before hatching.

Of the remedies proposed, none of them have proven very satisfactory, owing to the enemy being underground and out of our reach. The most effectual has been flooding the vineyard for thirty or forty days after the season's growth has been completed. Others claim to have found exemption in mulching the ground about the vines with coal ashes; others still, by interplanting with strawberry beds.

GRAPE FORESTER, *Alypia octomaculatu.* — Nearly every grape grower has seen what are called blue caterpillars feeding on the leaves of the vines. Fortunately they are not very numerous, but occasionally, they have appeared in such numbers as to entirely strip the vines. There are three distinct species of these blue caterpillars, which very closely resemble each other. They are the larvæ of the grape Forester, the Beautiful Wood Nymph, and the Pearl Wood Nymph. The first is by far the most common. The larvæ are most numerous during the months of May and June, but are occasionally seen throughout the season. When small, they are of a whitish color, with brown lines on the segments; it feeds on the underside of the leaves and lets itself down by a web. The full grown larvæ may often be found concealed in the folded leaves. It has eight light and eight dark lines on each segment, four each, on each side of a brown or orange band in the center. The larvæ of the Wood Nymph, may be distinguished as having but six of these lines to the segment. The blue shade arises from the contrast of these white and dark stripes. The head is of a dark orange color; the legs black.

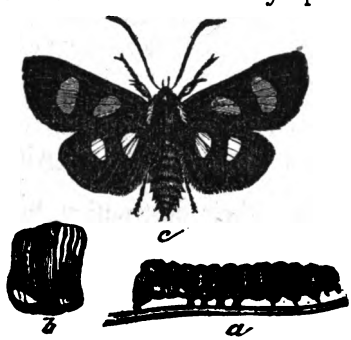

FIG. 12. GRAPE FORESTER.
a, Larva; *b*, magnified segment, showing lines; *c*, moth.

The larva is transformed into the chrysalis state in a slight

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cocoon on or near the surface of the ground. In a short time a moth of very dark, blue black color appears, with eight spots on the wings; the two on the fore wings being of a bright yellow; those on the hind ones white; the shanks and shoulders are also yellow. The male moth may be distinguished from the female by larger spots on the wings, a slenderer abdomen with a white line on the back of it.

For remedies, hand picking is recommended as the best; white hellebore and soap and water are also used.

VINE HOPPER or THRIP, *Tettigonia Vitis*, Harris. This insect is supposed to pass the winter, in the perfect state, under the decaying leaves and rubbish near the vines. Those that survive appear early in the spring and deposit their eggs on the young leaves of the vine. These hatch out early in June. The young larva resembles the perfect insect in everything, except it is without wings. As they increase in size they shed their skin several times. Generally they remain very quiet on the underside of the leaves, where, thrusting their sharp beaks into the leaf they suck out the sap, but if disturbed, they hop from leaf to leaf as briskly as a flea. They are so small as often to escape notice until much damage has been done. When full grown, they are only about one-tenth of an inch in length, but make up in immense numbers what they lack in size. Often all the juices are drawn out of the leaves so that they drop prematurely, and the fruit and wood fail to ripen for want of nourishment. The thrip enters the second stage of its existence, corresponding to the chrysalis state of moths and butterflies, in the month of August. Then its wings are developed, and with increased activity it goes from vine to vine, carrying on its destructive work until late in the season, when it goes into winter quarters as above mentioned.

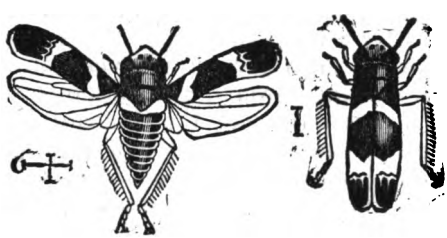

FIG. 13. VINE LEAF HOPPER.

Various expedients have been tried for their destruction, but none have met with universal success. Frequent stirring of the earth and rubbish near the vines, in the spring and fall, is highly recommended by some; others claim that by carrying a lighted torch back and forth through the vineyard at night they can be destroyed in myriads, as they are attracted by the light and are burnt. Sprinkling the vines with tobacco water, soap suds; dusting with sulphur, lime, ashes, road dust, hellebore, cayenne pepper, and fumigating with tobacco are practiced with more or less success. They do not thrive in wet seasons, and moisture is unfavorable to them, hence frequent drenching of the vines with water, taking care to reach the underside of the leaves, will hold them in check.

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GRAPE VINE COLASPIS, *colaspis flanda*, Say. This insect is a small yellow beetle, about two-tenths of an inch in length when of full age, and one-tenth in breadth. In some seasons and locations it has proved very destructive both to the grape and strawberry. The outer edge of its wing covers, the underside of the body and the tip of its antennæ are colored black. They are first seen issuing from the ground, generally in the strawberry beds, the latter part of June. At first it greedily devours the leaves of the strawberry, and then passes to other plants, riddling their leaves with holes. It is usually most numerous and most destructive to the grape in July and August. The larvæ of the colaspis is a yellow or greyish white worm, with a reddish yellow head. It differs from all other worms in having a pair of fleshy projections, terminating in short, stiff hairs, on the under side of the legless segments. Like the crown borer, it devours the roots of the strawberry; but while the first works in the crown of the plant, this eats the fibrous roots, and works into the woody portions from the outside. They may be found upon the roots during the fall, winter and spring months. No way has been discovered to reach the larvæ in the ground, save digging out and destroying with the hand. Picking the beetles by hand, and sprinkling the vines with the common preparations of Paris Green and Hellibore, have been tried with the best success.

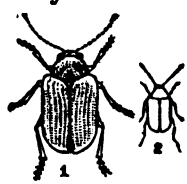

FIG. 14.
(1) Grape vine Colaspis, magnified.
(2) Natural size.

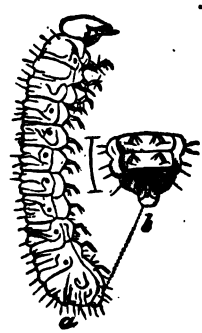

FIG. 15. Larva.

INSECTS INJURIOUS TO THE CRANBERRY. The following cuts were prepared by Prof. A. L. Packard, Jr., Entomological Commissioner, Salem, Mass. While they were drawn to represent the insects preying on the cranberry at the east, part of them are easily recognized as its enemies at the west. The vine worm, the fruit worm and bud weevil, are serious pests, and in certain localities often destroy the entire crop. The red striped and yellow worm, and gall fly, if known at all, have not proved serious evils here. The following notes are taken from descriptions by Prof. Packard:

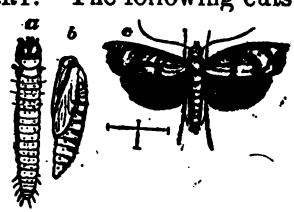

FIG. 16. CRANBERRY VINE WORM.

CRANBERRY VINE AND FIRE WORM, *Anchylopera Vacciniana*. "At Cape Cod, the worms hatch out about the first of June, from eggs that have remained on the leaves of the plants all winter. They commence to feed on the tender shoots of the vine drawing the leaves together with their web for a shelter. If very numerous, they soon destroy the leaves and tender shoots, and give the

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bog a dark, red appearance, as though a fire had run over it; hence the name fire worm. Having reached maturity, they spin up among the leaves on the vine or on the ground. After remaining ten or thirteen days in the pupa state, the moths hatch out and deposit their eggs on the leaves. This second brood hatches out in five or six days; it is this brood that is most destructive. They reach maturity for the most part, and go into the chrysalis state, before the 20th of July, but may be found on the vines up to September. The second brood of moths appears in July and August, and lay the eggs which hatch the following spring. The only sure way to destroy them is to cover the bog with water for twenty-four hours."

"The moth is of a dark ash color, with small yellowish brown bands on the fore wings, alternating with white narrow bands. The apex of the wing is dark brown."

THE YELLOW CRANBERRY WORM, *Tortrix Vaccinivorana*, Packard, is very destructive to the vines in New Jersey. It is of a pale, honey yellow color; and the moth has yellow wings, mottled with deep ochreous spots. It expands half an inch.

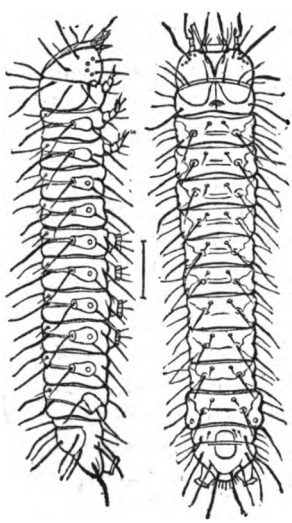

FIG. 17. YELLOW CRANBERRY WORM.
Hair line, natural size.

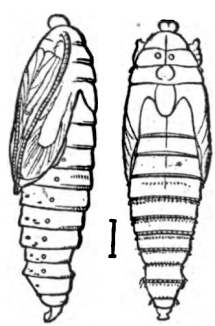

FIG. 18. CHRYSALIS OF YELLOW CRANBERRY WORM.

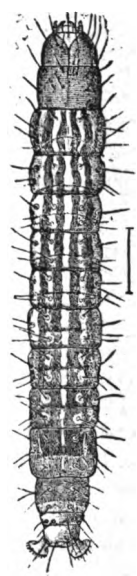

FIG. 19. RED STRIPED CRANBERRY WORM.

THE RED STRIPED CRANBERRY WORM is seen on the vines at the east about the last of September. It draws the leaves together by a few threads and eats off the *parenchyma* from the upper side; sometimes it spins a tube of silk between two leaves. The worms are less than half an inch in length, long and slender, pale green, with six longitudinal, pale reddish, broken, irregular lines. The parent is as yet unknown.

THE FRUIT WORM. — "The fruit worm is a small caterpillar, belonging to the same family as the leaf rollers. The first segment

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behind the head is rather large and square, and the body is less hairy, than the leaf eating species. The first eggs are laid in the berry soon after it is set, and from that time on, working through the season. The first signs of its presence is the premature reddening of the berries. Most of the worms attain full size before the first of September, but have been found even in the winter. When mature the caterpillar enters the ground and spins a cocoon within a few inches of the surface, where it remains all winter; this cocoon is usually covered with grains of sand and resembles a lump of earth. The parent of the caterpillar is not known."

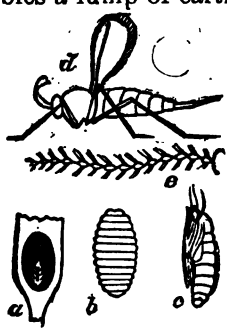

FIG. 20. CRANBERRY GALL FLY.

CRANBERRY GALL FLY.—This two-winged gall fly lays its eggs on the vines, from which are hatched out pink colored maggots, which raise tumors on the leaves. Its habits are yet unknown.

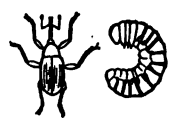
FIG. 21. CRANBERRY BUD WEEVIL.

CRANBERRY BUD WEEVIL. *Anthonomus suturalis.* — The weevil is a very small, reddish brown beetle, with a snout which is half as long as its body. The elbowed antennæ are inserted just beyond the middle; the head is darker than the body, being brownish black. The pro thorax is a little darker than the wing covers, and covered sparsely with short, whitish hairs. The "scutellum" at the base of the wing covers is white. It is a line in length including beak. This weevil lays its eggs in the buds of the cranberry; it selects a bud not quite ready to open, works its snout deep into the center, and then deposits the egg in the hole made; going back to the stem it cuts it off just below the bud, which falls to the ground and decays; a dull, whitish worm hatches out and feeds on the bud. Having attained its growth, it changes to the pupa state, and the perfect beetle eats its way out from the bud. This brood of beetles may be found on the vines soon after the blossoms have disappeared. As they are never seen on marshes flooded in the winter, it is thought that water will hold them in check.

THE ONION FLY, *Anthomyia ceparum*, is a native of Europe, and has been known in this country for about forty years. The following notes are mainly taken from Prof. Packard's entomological reports: The fly is of an ashy-gray color, with a silvery colored head. It some resembles the common house fly, but is smaller and slenderer. The two sexes are readily distinguished from each other by their eyes; those of the male being closer together and so large as almost to occupy the whole surface of the head, while in the female they are widely separated. The species is particularly distinguished by having a row of black spots along the middle of the abdomen, sometimes running into each other

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and forming a continuous line. The female is usually larger than the male and has this line of dark spots much less distinctly marked. In June, as soon as the onions are an inch or two in length, these flies deposit the eggs on the slender stalks near the surface of the ground, or at the base of the lower leaf, and sometimes on the earth near the stalk. Usually from two to six of these eggs are placed on particular plants, here and there through the bed. These eggs are white, smooth, oval in form and perceptible to the eye. They soon hatch, and the maggots work their way down along the stalk or inside the sheath of the leaf to the root, on which they feed until it is wholly consumed. Having devoured the bulb of one plant, they attack the next and so on, eating holes through the side into the center of the bulbs. The first evidence of their presence is seen in the leaves turning yellow and wilting, and on digging up the bulb, it will be found to be nothing but a shell. Worms of different ages are often found working in the same plant. They pass the pupa state in the bulb, or in the filthy, slimy mud, caused by their exudations near it. There are a number of broods during the season. The flies may be seen in beds infested with them throughout the whole season up to the last of August, and worms of all stages of growth, belonging to the different broods are to be found at all times. The last brood passes the winter in the pupa state.

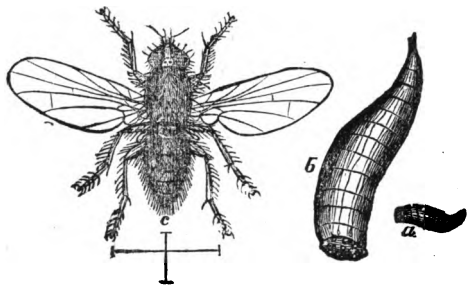

FIG. 22. IMPORTED ONION FLY AND MAGGOT.
a, Natural size.

The remedies used are mainly of the preventive order. Early planting is regarded as being beneficial, as it gives the plants a strong growth before the worms make their attacks. It is also claimed that by planting the seed two or two and a half inches deep, much loss will be averted, as the little maggots will not readily find their way to the bulbs. Good seed planted at this depth will germinate, but it is not safe to cover deeper, and at this depth, it is advisable to sow more freely, as some may not start. It has been recommended to plant onions in hills between other vegetables, so as to prevent the worms from passing from one plant to another, and thus deprive them of sufficient nourishment to secure their full development. As the pouring of boiling water on the young plants, just after the first brood of eggs has been deposited, has been recommended by those who have waged war with this pest, doubtless the common application of arsenic water or Paris green and water, would result in the destruction of many of them.

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All infested plants should be dug up and destroyed. Frequent and late fall plowing of the old beds will doubtless prove destructive to the larvæ left in the ground. Where the old bed has been infested, some relief will be obtained by selecting a new site, as far removed from the old one as possible.

NATIVE ONION FLY, *Ortalis flexa.* — The fly of this species differs from the European in color, being black, and in having three oblique, white stripes on each wing. The maggot is more slender, less conical, with a blunter head. Prof. Shimer, of Illinois, thus describes it, as first observed at the west: "In the latter part of June I first observed this maggot among the onions here; the top dead, tuber rotten, and maggots in the decayed substance. From them I bred the fly, after passing about two weeks in the pupa state. The flies were noticed in the garden at the same time. Their favorite roosting place was a row of asparagus alongside of the onion bed, where they are easily captured from daylight to sunrise, while it is cool and wet. During the day, they are scattered over the ground and on the leaves and stalks of the onions and are not easily captured. Their wings point obliquely backward, outward and upward, with an irregular jerking, fan like movement; flight not very rapid or prolonged. Two broods appear in the season." Habits and remedies the same as with the European species.

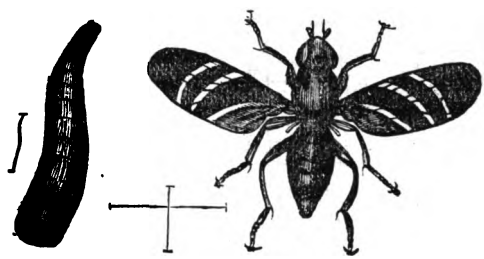

FIG. 22. NATIVE ONION FLY AND WORM.

THE ONION THRIP, *Limothrips tritici.* — This insect is described by Fitch as the wheat thrip; attacking the heads of wheat and clover when in bloom, and causing them to wither and blast. An insect similar to it is also known in Europe as preying on the wheat plant. In this country, especially at the east, they have proved very troublesome in the beds of onions, often destroying whole fields. They are very prolific, especially in hot, dry weather. What the hop louse is to the hop, and the aphis to the apple tree, such is this insect to the onion field. When left unchecked and the conditions are favorable, they seem to swarm in myriads and soon exhaust the vitality of the infested plants by devouring the outer surface of the leaves. These thrips are minute, narrow bodied insects, seldom exceeding a line, or a twelfth of an inch in length. The males are wingless; the wings of the female are long and narrow and beautifully fringed, and when folded back do not conceal the bodies beneath. They are

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exceedingly active in their movements, running and jumping like fleas. The female is of a greenish yellow color, with a smooth, shining body, usually about 0.04 of an inch in length. The male resembles the larva in form, but can be distinguished from it by its double jointed foot, and seven joints in the antennæ, instead of four. Its length is 0.08 of an inch.

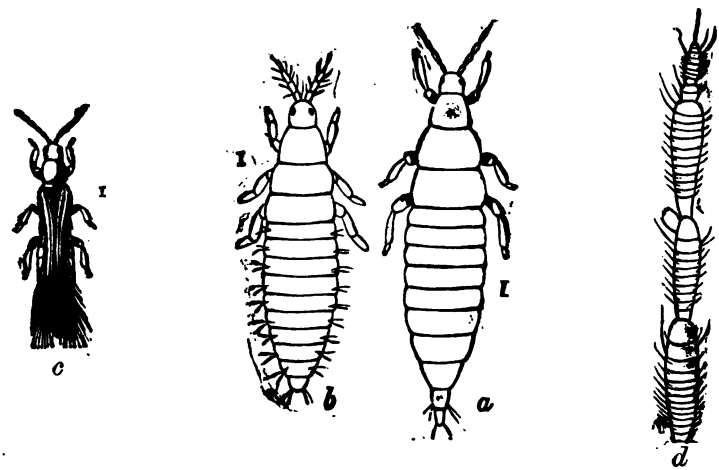

FIG. 24. ONION THRIP.

a, male; *b*, larva; *c*, female; *d*, antenna.

The same remedies may be used as for other insects destroying the foliage of plants, viz.: sprinkling with arsenic water hellebore, air slacked lime, sulphur, strong soap suds and copperas water, using a pound of copperas to ten gallons of water. The destruction of the plants that are infested, when they first make their appearance in the season will also effectually hold them in check.

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TRANSACTIONS AT ANNUAL MEETING.

AGRICULTURAL ROOMS, February 4, 1878,
7 1-2 P. M.

In pursuance of the call of the president and secretary, the opening session of the annual meeting was held at the agricultural rooms in the state capitol on the evening of February 4. As many of the members had not yet arrived, it was thought advisable to defer the delivery of the president's address until the morning session, and the time was given to social greetings, discussions and the appointment of the regular business committees. Correspondence, with the secretaries and members of other societies was read by the secretary. A letter from Prof. Thomas Taylor, microscopist of the Agricultural Department at Washington, was read, expressing regret that it was not possible for him to accept the invitation extended by the society to deliver an address at the annual meeting on fire blight, and expressing the hope that he would be able to do so at some future time. On the motion of the secretary, the president was again instructed to extend to him an invitation to meet with us at our June meeting.

President Smith gave an account of his strawberry crop the past season; it had been a very poor one, barely paying expenses; many of the vines had been killed by the grub worm, the larva of the May beetle, and in the spring, a brown cut worm had destroyed many more, eating off the vine and shoots near the surface, as soon as they came up; they were very numerous, and owing to their habit of working in the night and burrowing in the gronnd by day, were hard to exterminate; his vines had also been injured by other causes; had blossomed very full, and what were left by the worms gave promise of an abundance of fruit, but a large proportion of the blossoms blasted; little fruit set; he attributed this injury to high winds, as the outer edges and those portions of the beds most exposed in the direction from which the strong winds came, were affected the most.

G. P. Peffer said the best remedy for this cut worm was to destroy them while in the moth or winged state; for many years he had suffered much injury from them, but had accidentally discovered how to trap them, and now they did little damage. In making vinegar, he had vats and barrels of cider standing open, and

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found that multitudes of moths were attracted by the scent of cider in the night time, and were drowned in it; had observed before, they had been usually very thick around old pomace when thrown out, but had not taken the hint, until he found his cider all covered with them.

M. L. Clark recommended the use of ashes, salt, lime and plaster; putting a handful of the mixture around each hill.

Mr. Palmer thought that if we knew the habits of the cut worm we would suffer less by them, and could more easily destroy them; he had planted corn on sod ground, where they were very thick, and had received but little injury from them; he planted late, when the worms were nearly mature; were very thick at and near the surface, but they soon disappeared entirely.

A. G. Tuttle had seen fruit blossoms blasted by high winds, especially, the southeast wind; had trees in his own orchard that bore in alternate years on alternate sides; this was doubtless occasioned by some cause, which, in a fruit bearing year, destroyed the fruit on one side of the tree and did not affect the other; this alternation of fruit bearing and barren years on both sides of the tree, results rather from the condition in which the crop of the previous year left the tree, than in the accidents of the season; where a tree bears full one year, it will not bear the next; and by using care, preventing exhaustion by overbearing, we can secure fruit nearly every year.

A letter from Judge Cate was read by M. L. Clark, asking the cause of injury to grape vines the past season; although well protected during the winter, and apparently sound and healthy when uncovered, with fresh, green looking buds, yet many of them failed to germinate; some of the vines died out, root and branch, and others made but a feeble growth.

Mr. Greenman thought it was doubtless caused by the roots freezing dry the previous winter.

The secretary said the fall of 1876 was very wet, and there was too much moisture in the ground when winter set in to attribute the loss to dry freezing; he thought that much of the damage was the result of the late growth of wood, caused by the wet fall, and that the buds were immature and the wood lacking in hardiness.

The following committees were appointed by the president:

On Revision of Premium List — G. J. Kellogg, C. H. Greenman, and B. B. Olds.

On Conference with the State Agricultural Society — J. S. Stickney.

On Revision of List of Fruits to be Recommended — G. P. Peffer, J. C. Plumb and A. J. Philips.

On Resolutions — C, H. Greenman, Samuel Hunt and N. N. Palmer.

On Programme.— A. G. Tuttle, G. J. Kellogg and M. L. Clark.

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TUESDAY, February 5, 9 A. M.

The society was called to order by the president, and the report of the committee on programme was received and adopted.

M. L. Clark, delegate of the Lemonwier Horticultural Society, gave an interesting account of the operations of that society for the past year, indicating an increase of interest and activity on the part of its members.

President Smith gave a report from the Brown County Horticultural Society, showing an increased membership and a much greater interest in the discussion of horticultural and agricultural subjects. The past season, they had held monthly meetings for reading of papers and the discussion of practical questions, and had found them to be very interesting and useful.

In connection with these reports, the question of the distribution of the Annual Reports of the State Society was brought up. Mr. Clark said their society was very anxious to secure a copy for each member; that many had been induced to join by the promise of this and other reports, and when it was announced that they could not be obtained, much dissatisfaction had been felt, and many had been kept from joining the society. President Smith said members of their county society were very anxious to get more; each member would like to get them if they could be spared, but they did not want more than their share.

Mr. Tuttle thought that it would not be advisable, in fact, would not be practicable to offer a copy of our report to every member of local societies; if such inducements were held out, large lists of names could be obtained in certain localities, and our present limited number would soon be exhausted; he thought, for the number printed, that fifty copies to each local society was a very liberal supply; if one section received an excess, others would have to do without. The volume was held out by the society as an inducement to increase its membership, and if used thus freely to build up other memberships, it would tend to diminish its own.

Mr. Stickney was anxious to do what we could to help build up and encourage other societies, but the number of books at our command, and the fact that our volume is one of the inducements we offer to get members, on the fees from whom we are entirely dependent for the means to defray our expenses, he did not deem it advisable to supply them as freely as was thus proposed; he thought that fifty copies to each society was as large a number as could be spared, of the present number published, in justice to the society and other parts of the state; if more were wanted by members of other societies, they could readily obtain them by joining our society; the volumes were well worth the money. To enable members of other societies to secure an additional number of our reports and at the same time aid the state society, he would present the following resolution:

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Resolved, That this society offer fifty volumes of its Transactions to the local society which shall furnish to this society the largest number of members; and twenty-five volumes to the society which shall furnish to this society the second largest number of members, previous to our June meeting; provided, that these awards shall not be made unless at least ten members shall be furnished by one society. Lists of members furnished, to remain strictly confidential with our board of officers until our June meeting, at which time the matter shall be decided and awards made.

Which was unanimously carried.

The annual address of President Smith, and the report of the secretary were read. (See pp. 9, 13.)

President Smith said, in dissent from the statement of the secretary, that the currant crop at Green Bay was far from being a failure, his own bushes were loaded with fruit, and many of his neighbors had good crops.

Mr. Stickney was of the opinion that generally the crop was a failure throughout the whole state. In some few locations there may have been a partial crop. The failure was due, in part, to the winter and late frosts in spring, and in part to the green currant worm and borer.

TREASURER'S REPORT.

The following report was presented by the treasurer:

To the officers of the Wisconsin State Horticultural Society:

Your treasurer wishes to report that the receipts and disbursements of the society for the past year have been as follows:

RECEIPTS.

Feb. 21, 1877.	Received of former treasurer	$197 19
Feb. 21, 1877.	Received for membership fees	47 00
Total		$244 19

DISBURSEMENTS.

Feb. 21, 1877.	Paid Secretary, voucher 93	$100 00
Feb. 21, 1877.	Postage, voucher 94	3 00
May 27, 1877.	Postage, voucher 95	10 00
Feb. 5, 1878.	Balance on hand	131 19
		$244 19

Respectfully submitted,

M. ANDERSON, *Treasurer.*

On motion, the treasurer's report was accepted and adopted.

An interesting report was read by G. J. Kellogg, superintendent at the state fair (see reports).

JUNE MEETING. Mr. Tuttle, in behalf of the Sauk County Horticultural Society, extended an invitation to the state society to hold its June meeting at Baraboo.

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Mr. Clark invited the society to meet again with the Lemonweir Valley Horticultural Society, assuring a hearty welcome, and an addition to the list of members from that section. After a short discussion, it was thought advisable, as the society had met so recently with the Lemonweir Society, to accept the invitation of the Sauk County Society. It was so determined.

Mr. Stickney moved that in order to avoid the embarrassing situation in which we had been placed at some of our meetings, it be expressly understood, that the arrangements for and the management of the June meeting be wholly in the hands of the local society; that the state society should make provision for papers to be read, and for the discussions at the meeting, and its members should take part, not as a society, but as individuals; which was carried.

The committee appointed to confer with the State Agricultural Society in relation to premiums at the State Fair, reported, that society was willing to renew the proposition and conditions of last year, "The Horticultural Society to offer $600, in premiums; the premiums not awarded to revert to the State Agricultural Society."

The report was accepted and adopted.

The following resolution was introduced by Mr. Stickney, and passed:

Resolved, That new varieties of strawberries, to be entitled to recommendation from the society, should be shown at least once in single berries, and *on the stem.*

Mr. Clark exhibited the body of a Transcendent tree, blackened and shrivelled by disease, and asked for information as to what it was.

Mr. Tuttle said it was the blight; sometimes it affects the top of the trees only, and then again it strikes on the body; he regarded it as a disease, coming and going like diseases of the human family. Sometimes it prevails extensively, and then again it nearly disappears for a time. Had been known at the east for over forty years, and described by Downing, Barry and others.

Mr. Peffer mentioned that the past season, blight had made its appearance early in the summer, while the weather was quite cool, which led him to conclude it was not wholly the result of atmospheric conditions, as hitherto supposed by some; he thought where blight struck the body of the tree, it was because the tree was injured in the winter or spring.

Mr. Philips read a humorous report on fruit culture from S. R. McKinly, of Hamilton, for which the thanks of the society were returned, and Mr. McKinly was made an honorary member.

Mr. Stickney gave notice of the next meeting of the Nursery men's Association, to be held at Rochester, N. Y., and by vote o the society was appointed to make arrangements to facilitate the attendance of a delegation from the state society.

On motion of Mr. Kellogg, Messrs. A. R. Whitney, H. B. Em-

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ory, — — Pratt, of Illinois, and C. G. Patten, of Charles City, Iowa, were made honorary members, and invited to take part in the proceedings of the society.

The following resolutions, introduced by Mr. Stickney, were unanimously adopted.

Believing that forest planting and culture is so vitally important in its economic and climatic influence as to be worthy of national aid and encouragement, we hereby

Resolve, That we fully endorse the recommendation of the memorial of the American Nurserymen's Association, and ask for it the careful consideration of the Congress of the United States, and that in furtherance of this interest we ask the passage of bill No. 1218 of the House of Representatives.

Resolved, That we unanimously recommend Dr. Jno. A. Warder, of Ohio, as a man eminently fitted, by a life devoted to the study and culture of trees and by his thoroughly practical knowledge of the wants of our timberless prairies, to examine the forestry interests of other countries and gather therefrom such facts as will be most useful here.

Resolved, That copies of these resolutions be signed by the President and Secretary of this society and forwarded to our senators and representatives in Congress.

Adjourned.

TUESDAY, 2 P. M.

The society was called to order by the President, who announced that the first business in order was the election of officers for the coming year.

Mr. Stickney moved to amend article 4 of the constitution by inserting the word "superintendent" after the word "treasurer," and by striking out the words, "and the ex-president" in the third line. Which was carried.

The society then proceeded to the election of officers, and the following were chosen:

President — J. M. Smith, of Green Bay.
Vice President — C. H. Greenman, of Wauwatosa.
Recording Secretary — F. W. Case, of Madison.
Corresponding Secretary — M. L. Clark, of New Lisbon.
Treasurer — M. Anderson, of Cross Plains.
Superintendent at State Fair — F. W. Case, of Madison.
Additional Members of Executive Committee — J. S. Stickney, A. J. Philips and A. G. Tuttle.

The following persons were elected as committee of observation:

1st District, D. T. Pilgrim, of West Granville.
2d " J. C. Plumb, of Milton.
3d " E. H. Benton, of Oakfield.
4th " A. L. Hatch, of Ithaca.
5th " E. W. Daniels of Auroraville.
6th " M. L. Clark, of New Lisbon.
7th " D. Huntley, of Appleton.

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8th District, J. H. Felch, of Amherst.
9th " A. J. Philips, of West Salem.
10th " G. W. Perry, of Superior.
11th " C. W. Humphrey, of Cascade.
12th " J. M. Smith, of Green Bay.

The secretary was instructed to prepare the necessary blanks for the committee, to facilitate the work of gathering information.

The committee on revision of fruit list reported, " recommending to strike Plumb's Cider out of the list of five varieties, hardiness the only test, and insert Wealthy instead. Also to add Prouty's Seedling to the list of strawberries for trial, and to add to list of evergreens for live fence posts, Norway Spruce."

The report of the committee was accepted.

Mr. Clark moved to correct the report of the committee by inserting Plumb's Cider in the place of the Wealthy. He said the Wealthy was comparatively a new apple, and had not been extensively tried, and in some instances where tried had not proved satisfactory, but the Plumb's Cider had been well tested, and so far as he knew was not apt to winter-kill.

Mr. Tuttle thought much of Plumb's Cider, but judging by the test of hardiness, he saw no reason why it should be preferred to the Utter, or a number of other varieties. The Pewaukee stands better than the Plumb's Cider. In planting an orchard he should give the Utter the preference; thought it should stand in the list before the Fameuse. He had seen the Plumb's Cider winter-killed in orchards; in his own nursery, none of the so-called hardy varieties suffered more than it did; would not wholly reject a tree because it was tender in the nursery, for some trees were very hardy in the orchard that were tender there, as the Rawle's Janet.

Mr. Kellogg advised caution; he was aware that Plumb's Cider was liable to injury in the nursery row, but was not in favor of throwing it out.

Mr. Philips had nothing against the Plumb's Cider; but it had not proved hardy with him, and his experience was the same as that of others; in Mr. Peffer's orchard, out of a row of nine trees, eight had died. The Wealthy was the leading apple in Minnesota, where the climate is severer than ours; that and the Duchess are the only apples they feel safe in recommending there. The Wealthy has been tested here to some extent, and seems to be very hardy; he had set one hundred trees of it, and expected to set two hundred more in the spring; he thinks it is the hardiest tree we have; likes the appearance of the tree better than the fruit, but the past year the fruit was very good.

The motion to strike out the Plumb's Cider and insert the Wealthy was carried.

On motion of Mr. Kellogg, the Wealthy was added to the list recommended for general cultivation.

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On the motion to strike out the Ben Davis from the list for general cultivation, Mr. Tuttle remarked that he thought the society had done very great injury to the fruit growing interests of the state by recommending the Ben Davis; he regarded it as the worst mistake we had made; while it may do well in a few places, in a great majority of the places it will prove worthless. Motion carried.

The list of grapes was left unchanged.

On raspberries, Mr. Clark favored striking out Davison's Thornless, and inserting the Turner.

Mr. Stickney liked the Turner berry; it was most excellent, but he could not recommend it, as its persistence in throwing out suckers made it a troublesome pest.

On motion of Mr. Stickney, Davison's Thornless was dropped from the list.

President Smith thought we should give winter protection to the raspberry; he had adopted the practice, as much as with his strawberries, and found that it added largely to the yield.

The strawberry list was amended in accordance with the recommendation of the committee, by adding Prouty's Seedling; also, on motion of Mr. Clark, the Col Cheney was added for trial.

Pears, to stand as before. To plum list, the De Soto was added for trial.

The recommendation of the committee, to add to the list of Evergreens, Norway Spruce for live fence posts, was adopted.

Adjourned.

FEBRUARY 6, 9 A. M.

At the opening of the session the reports of the committee of observation for the 4th and 5th districts, were read; Mr. Plumb also made a verbal report for the 2d district, in connection with which he said that farmers are greatly encouraged in tree planting and the prospects are, that more trees will be set in southern Wisconsin than ever before. The more intelligent farmers there are moving forward cautiously, and are closely observing what our society endorse and recommend. This is complimentary to us, but should lead us to be careful what we recommend.

Pres. Smith said he was aware that the recommendation of the society exerted great influence in all parts of the state, and hence, it was exceedingly necessary that we move cautiously.

Mr. Kellogg made the report on behalf of the committee on revision of the premium list. In doing so he urged the great advantage to the exhibition of horticultural products of holding the fair at a later date, and advised, that we request the board of the state agricultural society to fix the time a week or two later. Report of committee accepted and adopted.

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A paper on Horticultural Education was read by A. L. Hatch of Ithaca; also one on Small Fruits for the Common Farmer, by C. H. Greenman, of Wauwatosa.

In answer to inquiries Mr. Greenman said that he preferred the one cane, and spur system of pruning, cutting the spurs back to three buds, and renewing the wood from time to time; vines should be set at an angle of about 45° to facilitate covering in the winter as without winter protection, it is impossible to raise grapes successfully. He does not practice summer pruning much, except the first year. Prefers the stake system to the trellis, as it is much easier, more simple, and though it may not give as much fruit to the vine, it would more to the acre, and of a better quality. If farmers would practice this system they would be well pleased with the results. Cutting the spurs back each year to two or three buds, the vines would never get beyond their control. Where the vines had been neglected and got twenty feet or more of old wood, he should cut back and get new canes, with bearing wood near the roots.

In relation to pruning currants President Smith said, where the currant wood is four or five years old, it bears but little fruit, and that is of an inferior quality; his bushes were set out over twenty years ago, in rows six feet apart and four feet in the row; his practice is to cut out the oldest wood each year, and to thin out the new growth, where too thick; manures each year and cultivates to keep down the grass and weeds; the result has been that he has had an abundant crop every season; even this year, when the crop has generally failed throughout the state, his bushes were loaded down with fruit.

Mr. Boyce favored cutting back and pruning every year; he had followed it, and had always raised large crops of currants. Spoke highly of the black currant; the more he used it the better he liked it; it is easy to raise, and always brings a good price in the market; selling readily for fifteen cents per quart, when red currants bring only five.

B. F. Adams said the advice of Mr. Greenman in relation to strawberries was good, but he was of the opinion that good paying crops could be raised on the same beds for three, four and sometimes five years in succession. Some varieties can be cropped longer than others. The Wilson is apt to weaken itself by overbearing, but thinks that good paying crops can be raised of it for two and even three years. English gardeners usually crop the same beds for a term of years, but we have adopted the practice of resetting after the first or second crop; thinks this is a mistake; thinks that better crops can be raised of the Charles Downing, and of Downer's Prolific, the second, third, and even the fourth year, than the first, and that the fruit, in size and quality, will not be inferior. Of course it will require care and labor to cultivate and renovate the beds. Do not know how long the same land may

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be cropped, but at the present time, has a third crop growing, and the vines are strong and healthy, and give every indication of bearing a heavy crop. His method of treatment is, as soon as the crop has been harvested, to mow the beds, plow between the rows, and drag and cross drag it, until it has the appearance of a newly sown field, and then to mulch the rows. Thinks the old leaves are a dead weight, a loss to the plant; usually mulches and covers with straw.

In response to an inquiry by Mr. Clark, as to use of manure as a winter covering, President Smith said he had not used it for that purpose, but thought pine leaves, straw, hay, or something that would not keep the plants too moist, would be better; manure should be applied to the surface when winter covering is removed. He had raised strawberries over twenty years, and had grown some very large crops, but had never got more than two good crops from the same bed; if the first crop was very heavy, he plowed the bed up at once, as the plants were too much exhausted to bear a crop the next season, even if they survive the winter. If the two first crops were light, the third crop would probably be a good one, but he preferred to reset, than to go beyond the second crop. The Wilson is very apt to exhaust itself by overbearing; other varieties might bear longer.

Mr. Stone, of Ft. Atkinson, was not in favor of covering with manure; unless the winter is very favorable, the vines will be greatly injured by it; coarse mulch is much better and safer.

Mr. Plumb said, that when covered with manure early in the season, the vines are apt to be smothered, but a light coating of manure late in the season will not be likely to do harm, especially where it is coarse. Strawberries and all our fruits were in the best condition possible at the present time; the very wet fall was a great blessing to the horticulturist; the amount of moisture in the soil, with the warm weather this winter, had helped to increase the life and vitality of our trees and plants, and they were in a better condition now than last October. Wanted to say a word about pruning grape vines, especially those mentioned as overgrown; the first thing to be done is to cut them down and make them start anew from the roots; do it at once, and not wait until spring; do not allow more than three canes to grow up; pinch off the laterals from these and let them grow to their full length; in the fall, cut back to three or four feet, according to the strength of the canes, and you have the fruit arms; if the trellis system is adopted, use but two canes, and tie these horizontally to the lower bar of the trellis, and start the upright canes from these; cut back the upright canes to two or three buds, in the fall. A vineyard pruned on the trellis system is a beautiful sight, but involves much care and labor; many of our most successful cultivators regard the stake system (two stakes to the hill) much preferable, giving better results with less labor. If farm-

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ers would get this theory of pruning, and practice it faithfully, it would enhance their chances of success in grape culture one hundred per cent.

Mr. Clark preferred the renewal system over any other; could raise more and better grapes per acre, in this way; it was very easy and simple when once understood, and any farmer who has once seen it done can do it himself.

In reply to an inquiry in regard to the strawberry leaf-roller, Mr. Stone, of Fort Atkinson said, that they had done considerable damage in his section the past season, but not so much with him; he plowed up his old beds the previous fall; the new beds he had sprinkled with Paris green, prepared as generally used for potatoe bugs, and applied in the same way; he used a teaspoonful of Paris green to a pail of water; the vines were sprinkled with this early in the spring, as soon as the leaves had made any growth, and it was repeated a short time afterward; in consequence, he had no leaf-rollers, while the vines of his neighbors were much injured by them. He would recommend mowing the vines after the fruit has been picked, and when dry burn off the beds slick and clean; will get rid of many insects in this way.

In reply to the question, how the Col. Cheney compared with the Wilson? he said the leaf of the Col. Cheney was thicker, and was not so much injured by the leaf-roller; and that it was about the same in productiveness; the berry was not quite as firm. The blossom of the Col. Cheney is not a perfect flower, and needs to be fertilized with other varieties.

Mr. Adams hand-picked his vines last fall, going over them once or twice a week and picking off and burning every leaf that commenced to curl. His vines this season had been nearly free from the leaf-roller.

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2 P. M.

J. W. Wood, of Baraboo, read a paper on Farmers' Gardens.

Pres. Smith stated that he had learned by experience the best way to keep celery was to place it in a common box, with a little earth over the bottom, setting the roots on the earth and sprinkling them occasionally with a little water. Put the box where it will keep near the freezing point. In this way it will keep fresh and green all winter.

J. C. Plumb, of Milton, read a paper on Relation of Soil to Tree and Fruit Growing.

In the discussion following, President Bascom remarked that the adaptation of soil and conditions of climate, in their relation to production, were most interesting and important questions. The ability to raise a great variety of products, especially of fruits, adds much to the desirability and prosperity of a country; the absence of the larger fruits, the inability to raise them, would

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be a very discouraging feature to those seeking a home in a new country, and on the other hand, an abundance would be a great attraction to settlers. If we are to have good fruit, we must raise it, for that which reaches us through the great markets is usually of an inferior quality; some of the finest appels he had ever seen were raised here, in Wisconsin. We have to meet peculiar difficulties here, in being exposed to protracted periods of great heat and great dryness; these seem to affect the circulation in our trees, and injure their vitality; when circulation is once checked and vitality is weakened, recovery is a slow, doubtful process; growth under such conditions will be slow; he had noticed that in the spring, the trees here seemed to have great activity in the root, an abundance of sap there, but a want of circulation, or ability to receive the sap in the tops. He had noticed in the orchard on the University farm that the trees were much affected in this way. The orchard is situated on a northern slope running down to the lake; the trees nearest the lake were in much better condition than near the top of the hill; this seemed to result from the influence of the location and lake in modifying the extremes of temperature and dryness to which the parts of the rows on the top of the hill were exposed. By the selection of locations for the orchard, where the conditions of moisture in the soil and currents of air will modify the extremes of heat and drought, we can doubtless do much to remedy these difficulties. Much may also be done by securing varieties that in the character of their growth can adapt themselves to these conditions. In no other country are there so many native apple trees as here, and they are very thrifty and stubborn in their manner of growth, which goes to prove that the conditions are not wholly adverse; it is with the more modified, cultivated varieties, raised under other conditions, that the greatest liability to injury is seen; and by patient, careful attention to the adaptation of varieties to conditions of soil and climate, we may overcome many of the difficulties now experienced.

Mr. Kellogg was of the opinion that most of the failures in orchards were the direct result of want of attention to this point; proper location and adaptation of soil are very important subjects In every county, township and section there is great diversity of soil and aspect, some good and many worthless. In laying out the farm, the house is located in the most convenient place; and the orchard must be near it, and is located without any reference to the character of the soil, or aspect, and the chance is ten to one that the result will be a failure. The clay and limestone ridges are the best sites and soils for the orchard; it is no use to set an orchard on a sand hill or gravel knoll; the higher the location the better, if the soil is a clayey loam, with a limestone base, and well underdrained.

Mr. Finlayson had observed, the best orchards are situated on

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elevated ground and in heavy soils. Trees will not do well on low land, or in black, loamy soil. When farmers leave off planting trees in their door-yards, and select proper soil, they will be able to raise good apples and have healthy trees.

President Bascom said he was aware that exceedingly low ground was not suitable for an orchard, but he thought, land bordering on streams of running water and lakes, where the soil could be drained thoroughly were, favorable locations, as the moisture given off by the water would modify the excessive dryness of the air, and the natural tendency of the cool air to settle towards the lower grounds would modify the extremes of heat. Free circulation of air is very desirable, especially where it is saturated with moisture; air passing over the lake absorbs more or less moisture, and mingling with the air for some distance around, helps to modify the temperature.

Mr. Plumb said all this trouble with our trees, called winter killing is the direct result of some cause, it may be immediate or remote; he believed that what is generally called winter killing, was often the result of injuries inflicted in the summer season; we have spring killing and summer killing also; he thought the trees were subject to attacks of disease as well as the human family, and these diseases result often from a combination of causes; in investigating what is the matter of our trees, it is as necessary to consider the symptoms and conditions, as it is for a physician to examine those of his patients. Much of the difficulty with our trees comes from the excessive dryness of our atmosphere; if we could supply the requisite moisture to the air, we should have an efficient remedy. The effect of this moisture in modifying extremes of climate is seen in the fruit regions of the eastern shore of Lake Michigan, and also on the peninsula between the lake and Green Bay; and though ice bound, the moisture and warmth given off have a marked effect. As we cannot have a Lake Michigan on the southwest side of our orchards, we must seek elsewhere for a remedy. We can modify the evil, in part, by setting evergreens on the south side of the trees, but this requires time; a screen for the bodies of the trees made of a board, cornstalks or tobacco stems, or anything which will break the force of the drying winds, and fierce rays of the sun will accomplish the same result. By studying these questions of adaptation of soil and conditions of climate, we may not be able to do away with all the evils to which we are subject, but will effect a great improvement in the cultivation of fruit.

Mr. Field thought when we knew how to properly cultivate our trees, we would suffer less injury; he set out a lot of evergreens last season; they all lived and grew well; had intended to cultivate thoroughly, but they were neglected and the weeds and grass grew up very rank, but they came through the winter all right, while those of a neighbor, set under similar conditions, but well

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cultivated, all died; he was satisfied that trees should be cultivated well, early in the season, but not late. His orchard had been much injured by killing of the bark on the southwest side, from top to the bottom; about fifty out of five hundred were killed, and most of the balance were injured, but will probably recover; he thought it was done by the rays of the sun in the winter, for to all appearance, the trees were in good condition in the fall; toward spring all at once, the black streak appeared. This season he had tied cornstalks to the body of each tree.

Mr. Tuttle said, we have both spring and summer killing; this loss of vitality, and stopping of circulation is often the result of causes which have been operating for two or more years; the trees may recover in three or four years, or a severe winter may finish what the summer has commenced. Extremes of heat and cold operate alike injuriously to the trees; a moist atmosphere would do much to remedy these evils.

Mr. Plumb said he was not acquainted with any other form of summer-killing than fire blight. The extreme heat of summer may weaken, but does not kill the tree; in the tropical climate of Mexico, where no rain falls for months at a time, and there is but little moisture in the atmosphere, trees grow very rapidly and do well. Trees sent there from Wisconsin, fifteen years ago, are now healthy and doing well. In this state, he found trees, standing in exposed situations, unprotected from the extreme cold of winter or the hard, drying winds of summer, that are healthy and productive. When we understand the reasons for these facts and can adapt our trees to the conditions in which they are placed, we shall succeed.

In reply to the question whether native growth indicated conditions favorable to the cultivation of certain trees and crops.

Professor Chamberlain said he had presented certain facts in the Geological Report, in relation to the natural association of our native plants, thinking that they might be of value in connection with this subject. There it is stated that a certain undergrowth almost invariably accompanies a given overgrowth. This may be because both demand the same conditions of soil, etc., or, in part, where there is a dependence upon the conditions furnished by each other, as of shade. Sixteen of these natural groups of native vegetation are given as occurring in the eastern part of the state; among these are subordinate varieties or subgroups. Where the areas occupied by the several groups join each other, they mingle more or less. In some cases, the effect of local causes can be observed. I judge, from what I have heard of this discussion, that these localities which have been selected by nature for the growth of trees of a similar nature to those which we cultivate, are the ones which we find, in our experience, best adapted to such growth. It is also evident that there is a relationship between the soil and the

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native vegetation which springs from it, and that therefore, the study of the two together ought to be productive of valuable results, if carried out in actual experiment.

Mr. Finlayson inquired if the growth of the wild apple was any indication of adaptation for the cultivated apple.

Prof. Chamberlin replied that it might be a theoretical inference. We find that the crab apple associates with the oak, and as the oak openings and forests give place to the dense maple forests, we find the ordinary crab apple replaced by other members of the same family; but he would not infer that the absence of the crab apple would imply the absence of suitable conditions.

An address on "Forestry and its Needs," by Dr. John A. Worden, was read by the secretary (see papers).

Society adjourned to meet in joint convention in the assembly chamber at 7:30 P. M.

THURSDAY, 9 A. M.

The society was called to order by the president, and the report of the committee on fruit on exhibition was read.

On motion, the usual appropriation was voted the secretary.

A paper on "How best to utilize our Fruits," by J. S. Stickney, was read by the secretary (see papers).

Mr. Kellogg said our farmers should raise more small fruit, both for family use and to can and ship; there was no fear that the market would be over stocked, for the demand would increase with the supply. Years of plenty, with fruit at low prices, created a demand for it in families where it had not been used before.

President Smith was convinced that if the farmers knew the pleasure and benefit they would receive by it, they would raise an abundance of fruit; instead of having an occasional dish as now, they should have it fresh on their tables all through the season, and can enough for the winter's supply; this would contribute much to their health and comfort; he had found it so in his family. The strawberry season lasted with them about 35 days, in dry seasons about ten days less; the season could be lengthened and and the yield increased by irrigation; the strawberry does best with plenty of water. For profit he would raise the Wilson; had never made a dollar on any other variety; had tried other varieties, some of which promise well; had tried the Kentucky two seasons; it was a late variety and lengthened the season; was better pleased with it the last season than the first, but wanted more experience with it before recommending it for general cultivation.

Mr. Adams thought favorably of the Kentucky; it was about ten days later than the Wilson, but was not as productive; by cultivating early and late varieties, the season lasted with him about forty or forty-five days; for an early berry, he raised the

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Early Scarlet, formerly known as the Baltimore or New Jersey Scarlet; the berry was solid and bright red color; he had sufficient confidence in it to plant it quite extensively.

The secretary read extracts of letters received from Mr. M. McCanly, of Battle Creek, Mich., giving an account of a fruit house built there for the purpose of storing fruit; the substance is herewith given. The building was erected by Hellings & Brother, of Philadelphia, who own three buildings used for this purpose, on at Philadelphia, in which tropical fruits are successfully kept, one in Western New York, used largely to preserve small fruits, and the one at Battle Creek. This building is 60 x 120, with a wing for receiving and packing fruit, 40 x 60. The walls, made of stone laid in water lime, are two feet thick and twenty-eight feet high. In the main building there are sixteen foundation walls, on which stand forty-eight posts, 12 x 15 inches, twenty-four feet high, which support a heavy frame work of timber, on which is laid a floor of galvanized iron, for the ice reservoir. The sides of this reservoir are also lined with iron, leaving a space of eight inches between it and the side walls, which is filled with sawdust; the floor above the reservoir is also double, and filled between with sawdust; the center of the floor on which the ice rests is considerably lower than the sides, so as to readily carry off the water from the melting ice. The capacity of the reservoir is 2,000 tons. The storing room below has double floors, and the sides are ceiled up with inch boards, with an eight inch space between the boards and the stone wall, which is filled with sawdust; troughs made of wood are fixed to the ceiling above to catch and carry off any water escaping through the floor above. Doors are arranged at intervals to ventilate and help regulate the temperature. The capacity of the storing room is 20,000 barrels, and the cost of the whole building, about $19,000.

The building has been in operation for three seasons, and has been very successful in preserving fruit. The crop of 1876 was marketed in May and June, and the loss was estimated at about eight per cent. It would have been much less had the apples been properly selected. Mr. McCanly states that he has seen samples of Northern Spy kept in this manner, that were four years old, and in apparently as good order as when picked from the tree.

A paper entitled "Some things I Have not Done," was read by Geo. J. Kellogg.

SENATE CHAMBER, 2 P. M.

By the courtesy of the Senate, the Society met in the Senate Chamber to listen to the papers prepared by the ladies. The following papers were read:

"Horticulture and Health," Dr. H. Allen.

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"Sacred Trees and Other Plants of Supposed Mystical Virtue," Mrs. H. M. Lewis.

"Lights and Shadows Among my House Plants," Mrs. C. D. Robinson.

"Ornamental Foliage Beds," Mrs. I. H. Williams.

"Our Homes," Mrs. A. A. Arnold.

"Thistles," Miss Ella A. Giles.

"Economic Value of Seeds in Cultivation of Plants," Mrs. D. C. Ayres.

"Ornamental Trees," Arthur Bryant, (see papers).

At the conclusion of the papers, a vote of thanks was returned the ladies, and on motion they were made honorary members of the society.

FRIDAY, 9 A. M.

Called to order by the president.

A statement was made by Senator Bones, of Racine, in relation to a very fine sample of Richfield Non Such Apples, raised on his farm. He has fifty trees of that variety in bearing; the trees are very productive and bear young; the fruit is of good quality and of a very attractive appearance, and finds a ready sale. A neighbor has set out an orchard of 300 trees of it.

Mr. Tuttle said this is one of the varieties of apples that can be raised successfully on the lake shore, but will not grow elsewhere; has been tried in various places, but without success; it would be a very desirable and valuable apple if we could raise it, but it is useless to attempt it in the interior of the state.

CODLING MOTHS. Mr. Tuttle stated that he had accidentally discovered a method by which the codling moths could be destroyed; the plan of putting strips and bandages on the trees was attended with a good deal of labor, and required much care, and did not result in the destruction of but a small part of these pests. Finding many moths were caught in an open cask of cider vinegar standing in his yard, he had set shallow pans containing vinegar around among the trees, and succeeded in catching hundreds of them; as a result, his fruit this season had been nearly free from worms, while that of his neighbors was badly eaten by them; he had great confidence in this plan of destroying them, and thought if we used this remedy properly, we need not fear the moths in future; would put out the vinegar about the time the fruit commenced to drop, or even earlier, when the moths commence to fly in the spring.

H. M. Thompson, of St. Francis, read a paper on "Trees for the Roadside and the Farm," (see papers.)

A. J. Philips, of West Salem, followed with a paper on "Advice to Farmers of the Northwest on Fruit Growing."

Mr. Plumb, in the discussion following the reading of this pa-

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per, said he was pleased with friend Philips' way of coming right at our difficulties; it is to such men, who are hopeful in the midst of discouragements, and who look our evils square in the face, that we must look for help out of our troubles. Members of our society should do missionary work among the people; by pointing out the difficulties that stand in our way and showing the methods by which these difficulties can best be overcome, we shall lay a good foundation for success in the future. In regard to selection of varieties for different situations, as suggested in the paper read, he would recommend that those about to plant should observe what varieties are doing best in situations near by, where the conditions are similar to their own, and select them. In some of the northern counties, the Siberians and the Duchess are the only apples that can be raised; they compose the main part of many orchards, and may be regarded as the representative apples for that country; by proper care and development the number of varieties that can be raised in that section will be largely increased, and there is no doubt but that in a few years the marly, clay soil of that section, which is rich in magnesian limestone, will develop a marked adaptation for fruit.

FRIDAY, 2 P. M.

On the opening of the convention, a paper on "Apples: Best Six Varieties for the Common Farmer," by B. B. Olds, of Clinton, was read by the secretary.

Mr. Plumb thought friend Olds had in mind, when writing his paper, varieties adapted to the southern part of the state, his own county especially; the kinds that thrive there will not always succeed in more northern locations. The Lowell he speaks so highly of, is a good apple, needs a rich soil, the kind called clay loam. The Ben Davis does well on clay soil, on high ridges; he had seen, this season, fine healthy trees, bearing nice fruit of this variety in the northern part of the state; it is not sufficiently hardy for low land and rich soils; he would strike out Jonathan, Lowell and Ben Davis, except for lean oak soils and dry elevations, and would add to the list, the Utter and Walbridge, the first, for us, the most profitable fall apple, and the latter as the best long-keeping winter apple we have for general use and market, its hardiness being well established by twenty years of trial in Rock and Jefferson counties; think they will do well on firm soils much further north. We must not look at soil alone, but consider the aspect also, choosing a northern or eastern, rather than a southern slope. Mr. Olds does not mention the Pewaukee, which is a fine apple, doing well on light soils.

Mr. Sloan stated that some years since he had set 75 trees on prairie soil, with subsoil of white clay and gravel; three of these trees were the Lowell, or what is commonly called the Greasy

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Pippin, and they had yielded more and better fruit than any other variety in the lot; he wondered that it was not extensively propagated in southern Wisconsin; he was aware that isolated facts do not establish a general rule, and that no general rule is applicable to all localities; it might do well with him and not elsewhere, but for himself, he would prefer to have one Lowell to five of any other kind.

Mr. Robbins said this variety was known in the southwestern part of the state as the Greasy Skin, and was a very fine apple for fall; he set them in his orchard thirty years ago; they had done as well as any other variety he had, but that the Golden Russet and Fameuse were the only kinds they could depend upon. Apples seem to be a failure in their section; he has an orchard of 400 trees, and yet, most seasons, he has to buy apples, if he has any at all; trees seem to be thrifty and grow well, but do not bear.

Mr. Tuttle thought the Lowell was better than the average of our fall apples; there are many locations where they will not succeed; will not bear in grass land; they need careful cultivation; he had tried them first on prairie soil; the trees lived along a number of years and then died; then he set on high ground, in the best soil we have for the orchard and about half of these died. He regards the Walbridge as very hardy; thinks that sites can be selected where it will do well as far north as Green Bay; he has seen it doing well on rich, mucky, prairie soil, the worst soil you can have for an orchard. The Pewaukee is a native of our state; a seedling of the Duchess and Alexander; some are inclined to discard it as being tender in the nursery, but as it grows older it changes in this respect; he is well pleased with its appearance, and thinks it will prove to be one of our best trees; the apples are late keepers, and when the trees get age, they will be sufficiently hardy for all locations where the conditions are favorable for other varieties. Do not think we shall ever be satisfied with Siberian apples alone in this state, or that it is necessary that we should be confined to them. Doubtless many varieties of the Russian and other kinds will be developed sufficiently hardy to take their place. The Utter, like the Pewaukee, is tender while young, but once established in the orchard, it is one of the most valuable trees we have; it is peculiarly adapted to a dry climate, and does better in the interior than on the lake shore; better here than in Michigan; it will bear neglect better than any other variety we have.

The following resolution was passed unanimously:

Resolved, That the thanks of this society are hereby tendered to the several railroad companies for their courtesy in granting reduced rates to members in attendance at this meeting.

Mr. Philips said, as some members thought the society, in striking the Plumb's Cider from the list of five varieties, hardiness the only test, had been too hasty, he would move that the number of

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that list be increased to six, and that Plumb's Cider be added as one of the six. He was opposed to frequent changes or hasty action, and would not add to or strike out of our list without due consideration. As he said before, the Plumb's Cider, in his orchard, had not proved as hardy as the Wealthy and some others, but he knew of other places in which it was doing well.

Mr. Clark seconded the motion, and spoke very favorably of the Plumb's Cider, as far as he had had experience with it or had observed it in other places.

Mr. Plumb regretted that he had not been present, when the action had first been taken on this question, and wished to be put on record as opposed to striking out Plumb's Cider. It certainly was a very hardy and productive variety; he could cite instances in which it was living and bearing fruit, where other hardy varieties had failed, or nearly so. It was doing well in many places, where the conditions are considered as unfavorable for orchards; it had been planted very extensively, all over the West, and, as far as he knew, had proved as satisfactory as any of our so-called iron clads.

The motion of Mr. Philips, to add it to the list, was carried.

Society adjourned *sine die.*

TRANSACTIONS AT SUMMER MEETING.

JANESVILLE, 2 P. M., June 26, 1877.

In accordance with the resolution passed at the winter meeting of 1877, accepting the invitation of the Janesville Horticultural Society to hold the summer meeting with their society, it was called at Janesville, June 26.

At the appointed time the society was called to order, President Smith in the chair.

On motion, the chair appointed Messrs. Lawrence, Plumb and Case, committee to arrange programme.

Messrs. Plumb, Tuttle and Peffer were appointed a committee to arrange the fruit list of the state for the American Pomological Report. After some discussion, it was decided to make no exhibition as a state at the fall meeting of the Pomological Society in Baltimore.

The question was asked, why we have no fruit this season, and in reply Mr. Tuttle said he attributed it to the immaturity of the wood formed the previous season; the weather was so cold and wet the last fall, that the wood did not ripen, and fruit buds were not formed.

The secretary stated that in many localities the fruit buds had formed and were apparently well developed, and appeared healthy

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up to the middle of February; citing the experience of E. G. Mygatt, of Randall, and others, that the fruit buds in their orchards were, to all appearance, well formed, but winter killed. Thought it was, in the main, due to immaturity of wood, and consequent lack of vitality in fruit buds, caused by trees overbearing in 1876, and the very wet fall.

The committee on programme reported that, owing to the slim attendance then present, it seemed advisable to put off hearing the president's address and other papers until the morning session; which report was approved, and the society adjourned.

COUNCIL CHAMBER, 9 A. M, June 27.

At the opening of the morning session, the president delivered his address, which was briefly responded to by Mr. F. S. Lawrence, of Janesville.

In relation to the fall planting of shrubs and trees, Mr. Lawrence inquired if it would not be advisable for the society to recommend it, so as to induce farmers to plant, who would neglect it altogether if left until the hurrying time of spring.

Mr. Plumb had tried fall planting to some extent, and with very good success; especially the larch, which seemed to do best when set in the fall; he regarded it an important question, and it should be recommended, if it could be done safely.

Mr. Stickney stated that his experience in setting evergreens in the fall had taught him to let them alone; hardy, deciduous trees can be safely set in the fall, but greater care should be taken in setting; each tree should be staked, and a mound of earth made about the trunk to prevent swaying by the winter winds. He had seen evergreens set out in the fall, and do well; if set in the fall, would set very early. Small evergreens can be moved in the summer, after the first growth is over, if carefully handled; the tree is then dormant; the best time to re-set any tree is when it is nearly dormant, so as to check growth as little as possible; the second growth of evergreens is mainly in the roots, which is to prepare them for the drafts of winter; when this root growth is checked, look out for injury in winter.

President Smith thought the society should encourage tree planting in every way possible; he believed that if our nurserymen would keep a good assortment of forest trees on sale, at low rates, farmers would soon be induced to plant them extensively; in Germany, farmers were required by law to set trees by the roadside, and if they neglected it, the government set them and made it a tax on the land.

The adaptation of location and soil to orchards was brought up, and Mr. Plumb remarked that he had given much attention to this subject, and had concluded that the geological structure

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of the soil had more to do with success or failure in fruit raising, than culture. By vote of the society, Mr. Plumb was requested to present his views on this subject in a paper to be read at the annual meeting.

Papers were read by A. J. Philips on "Fruits of Western Wisconsin;" by B. B. Olds on "Summer Apples."

Mr. Stickney stated that in the nursery row the Pewaukee had been injured more than usual; he very much regretted to see this evidence of lack of hardiness in our premium apple; it is naturally a strong grower, and, in rich soils, was inclined to make too rapid and too late growth. Old trees in the orchard had done well and were uninjured. Where growth is slow, the trees are much more hardy.

Mr. Peffer said he had not suffered any loss with the Pewaukee either in nursery or orchard; all but two of the older trees in his orchard had a fair crop of fruit on at the present time.

In Mr. Tuttle's experience, the Pewaukee had been full as hardy as the Utter and Fameuse; the Fameuse is apt to be more tender in the nursery than when it reaches the bearing age. This is the case with many trees, so that the condition in the nursery is of little use as a test; we have some kinds that are all right in the nursery that are worthless in the orchard. He had full faith in the Pewaukee as a hardy tree. The stock of Russian varieties, obtained from cions of the Department of Agriculture, still promised well; they had never failed to leave out to the terminal bud. Two years ago, he had set some of these trees in the poorest locations for trees on his farm, on low, marshy soil, where water stands during a portion of the year; they had come through all right, starting to the very tips, while some of our hardiest varieties, set near by, but on higher and better land, were injured, last winter. But few of these varieties have fruited yet, but he is confident we shall find some that will be very valuable.

Mr. Stickney said he had seen Russian apples fruiting as grafts, in Minnesota, seventy miles north of here; the stock seemed very hardy; the fruit was very showy, of waxy complexion, and a bloom resembling that on the Red Astrachan.

Following this discussion Mr. Stickney read a paper on "Succession of Small Fruits for Summer;" Mr. B. F. Adams, one on "Cultivation and Yield of Strawberries;" Mr. C. H. Greenman, one on "Strawberry Culture;" and E. W. Daniels, on "Cranberry Culture."

Mr. Stickney said that on two occasions he had raised at the rate of one hundred quarts of strawberries to the square rod; once, on two or three square rods, the other time, on half an acre; they were set in rows between yearling apple trees, and the culture given them was but little, if any, better than common field culture. Had known of two instances in which this had been exceeded with high culture. Cultivators at the east are trying to

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get plants of a greater vitality, and an extra strong growth, that will yield crops for three or four years without resetting; this would be a great acquisition; would save much labor and expense; but where we cultivate so as to get heavy crops, it is at the expense of the vital forces of the plant, and we must reset every two years.

Mr. Kellogg related two instances where larger yields had been obtained, one, 160 quarts; the other, 140 quarts to the square rod. He placed his limit at 500 bushels per acre.

Pres. Smith was satisfied that these large yields could be obtained, but the average was far below; he thought less even than 100 bushels per acre. At the east it is generally less than here; but some get very large crops by excessive culture. Peter Henderson, of New Jersey, cultivates his strawberry bed eighteen inches deep; manures very heavily, raises his plants in pots and transplants into the bed; preserves the hill form, cutting off all runners, and cultivating thoroughly; he gets a yield of nearly three pints to the plant. For general use, we have no plant like the Wilson; we need others to lengthen out the season, but this is yet our main dependence. It is a hardy, strong grower, but if we get heavy crops, it is much better to reset every two years.

Mr. Plumb said that on light, sandy soil, with moderate culture and yield, the Wilson and some other varieties would continue to bear for a number of years; but, usually, the amount of care required to maintain the vigor of the plants and to keep down the weeds, made it cheaper to reset often.

2 P. M.

The society again met and the following papers were read: "Home and its Horticultural Surroundings," by J. C. Plumb; "Summer Flowers for the Garden," Mrs. D. Huntley; "Woman's Work in Horticulture," Mrs. H. M. Lewis; "Our Girls as Horticulturists," Mrs. I. H. Williams; "The Pansy," Mrs. D. C. Ayres.

An interesting discussion followed these papers, but space will not admit of giving even a brief abstract.

A vote of thanks was given to the Janesville Horticultural Society, and the citizens of Janesville for their kind care and attention.

Society adjourned.

In connection with this meeting, an exhibition of strawberries and flowers was held, under the direction of the Janesville Horticultural Society. Unfortunately the exhibition room was not well adapted for the purpose, and being detached from the room where the meetings were held, the interest of the members and of the public at large in both, was lessened.

The articles on exhibition were rather small in numbers, but of very fine quality. (See list of awards.)

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REPORTS OF COMMITTEES.

EXHIBITION AT STATE FAIR.

GEO. J. KELLOGG, SUPERINTENDENT.

Mr. President, and Friends of Horticulture: I need not remind you that the year 1877 gave us very little fruit except strawberries, raspberries and grapes. You can visit your cellars and view the empty barrels, boxes and bins, ask your children what kind of apples they like best, and they will probably tell you there are no apples, that they are eating the same kind of fruit our fathers did forty years ago, in the wilderness of Wisconsin, the turnip. Why this general failure of apples, not only in our state but east and south, is a matter of no small talk; yet apples are in the market to-day, very fine Willow Twigs at $3.50 per barrel, from Illinois; Baldwins from York state at $4.50. The hard times makes the prices, and deprives many households of the usual supply of apples. This should not be, for every farmer can better afford a barrel of apples than two visits from the family physician, and farmers can afford a hundred pounds of pork for a barrel of Baldwins.

The unusual crop of 1876 was so heavy a draft on the resources of the trees that but few blossom buds were formed, and many of these lacked vitality. A wet September, with frost the 15th, ice the 27th and 30th, with a hard freeze October 5th, 7th, 8th, 9th and 11th, forming ice from ¼ to ½ inch, followed by a very changeable winter, with the thermometer 25° below zero to 50° above, with the following notes from my diary: December '76, thirteen days below zero; January, '77, twenty days below, followed by a thaw from January 27th to March 4th, freezing nights, and giving 52° variation in 24 hours; and this continued freezing and thawing process for thirty-six consecutive days, with only two nights that it did not freeze; followed by zero March 4th; 9th and 10th, 10° below; a thaw, the 11th 12th and 18th, with zero the 15th, and the 17th, falling to 8° below, with some very hot days in April, and ice May 1st, 2d, 3d and 9th; frost the 23d, 24th and 25th, and ice again May 26th; what wonder that our apple crop was light? The wonder is that we had any fruit at all.

Fearing there would be a very small show, your superintend-

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ent corresponded with very many fruit-growers throughout the state, urging extra effort in saving specimens and making an exhibition. The result was, the hall provided, 26 by 90 feet, was far too small, crowding 1,200 plates of fruit and 1,000 pots of plants, with a large display of cut flowers, into so small quarters that the effect was not pleasing to the exhibitors, if it did astonish the throng who viewed with wondering eyes, and asked "from what state did this come?" The principal exhibitors of apples and pears were from the lake shore counties. G. P. Peffer's collection was large and full, of apples, pears, plums, grapes, and an innumerable host of seedlings. Jas. Ozanne, M. D., Somers, Kenosha county, twenty-six varieties of apples and fourteen varieties pears. Geo. Jeffrey, Smithville, Milwaukee county, was on hand with a fine collection of fifty-six varieties of apples, thirteen of pears, six of crabs and two of plums. Mrs. William Wallace, Sussex, sent for exhibition ten varieties of apples and six of crabs, but there being no entry fee the superintendent did not enter them. They would most likely have taken prizes had they been entered for competition; and the same is the case with a fine collection of twelve varieties of grapes, from J. W. Arndt, Depere, Brown county. This is the county where they can't raise anything but strawberries, grapes, pears, onions, etc. The above collections, with a nice show of pears from Brown county, brought for exhibition by our worthy president, comprise the show from the lake shore counties, unless D. T. Pilgrim's fine show of eight varieties pears, seven of plums and four of crabs may come in the favored belt; it must be so, for no eight varieties of pears grew in 1877 out of the reach of the soothing influence of lake Michigan.

From the interior, the largest show of apples was from B. B. Olds, which took a liberal share of first prizes. This orchard is located in the southeast portion of Rock county, and has been infested with the canker worm. Mr. Lee, a neighbor, informed me that his (Lee's) crop of apples in 1877 was heavier than ever before, that the canker worm had so recently left it that it did not overbear last year, hence his good crop this year. A. G. Tuttle's collection of thirty-five varieties of apples, nine of crabs, four of grapes, two of pears, and a show of cranberries, though not up to his usual standard, shows what Baraboo can do, when Fameuse, Duchess and Alexander trees fairly broke down with their loads of fruit in 1877. Wm. Reid had a large collection of apples, crabs and grapes, making a very fine show. Messrs. Plumb & Son made a fine show of grapes, apples and crabs; prominent among the grapes was Roger's No. 4; they had also a large collection of fruit and deciduous, evergreen and ornamental trees; also a fine collection of twenty varieties of Dahlias. C. H. Greenman, with his thirteen varieties of grapes from his own vineyard, and twenty-one varieties from the vineyard of Victor Lowe came a

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little too late and was ruled out from entering. The collection was very fine, and drew a large share of admiration and discretionary premiums. F. S. Lawrence had on exhibition twenty-three varieties of grapes, a splendid show, and carried off most of the first prizes. S. G. Williams made a splendid show of Roger's, 15 on canes, and carried off two first prizes. F. W. Loudon, a fine show of apples and grapes. C. C. Fisher, Center, a few plates choice apples. L. L. Kellogg, twenty varieties grapes, also apples and crabs. N. N. Palmer, Brodhead, very fine show of grapes apples, etc.

The most prominent among the professional florists, were Wm. Kitzrow, with a choice collection of plants and flowers. Mrs. A. H. Caldwell, with 400 pots, and choice cut flowers, and R. P. Allen with a choice collection, and large enough to have occupied one-quarter of the hall. Prominent among the amateurs was Mrs. F. S. Lawrence, Mrs. S. A. Whittier, Mrs. E. R. Copeland, Miss Kate Peffer, Miss Emily T. Smith, Mrs. A. A. Boyce, O. P. Freeborn, Milton, a fine show of cut flowers and green house plants; Mrs. S. G. Williams, Janesville, floral design; Mrs. Rob't Boyd, Evansville, a fine show cut flowers; Miss Gertie Kellogg, choice collection cut flowers; Mrs. A. A. Boyce, Lodi, choice collection of twenty varieties of Dahlias, also cut flowers, a choice collection; Miss Kate Peffer also made a choice exhibition of twenty varieties Dahlias; Mrs. Wm. Paul, Milton, cut flowers; Mrs. J. P. Thomas and Jacob F. Bemis, entries for special premiums.

With 548 entries in the horticultural department, no wonder we were short of room; the floral department alone would have filled the hall. We cannot do justice to our exhibitors with a hall less than 40 by 100 feet. The unfavorable season, and the condition of the finances of the parent society, led us reluctantly to accept the room provided; and notwithstanding the combined hindrances, our department was the most attractive, and did more to make the fair a success than any hall or department on the grounds.

PREMIUMS AWARDED AT STATE FAIR,

Held at Janesville, September, 1877.

FRUITS BY PROFESSIONAL CULTIVATORS.

APPLES.

t y, not to exceed fifty, G. P. Peffer, Pewaukee	$10 00
Second best, A. G. Tuttle, Baraboo	7 50
Third best, N. N. Palmer, Brodhead	5 00
Best ten varieties adapted to the northwest, Wm. Reid, North Prairie	7 00
Second best, A. G. Tuttle	5 00
Third best, G. P. Peffer	3 00

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Best five varieties adapted to the northwest, J. C. Plumb, Milton	3 00
Second best, A. G. Tuttle	2 00
Third best, G. P. Peffer	1 00
Best variety winter, not to exceed ten, G. P. Peffer	5 00
Second best, N. N. Palmer	3 00
Third best, Wm. Reid	2 00
Best five varieties winter, A. G. Tuttle	3 00
Second best, Wm. Reid	2 00
Third best, G. P. Peffer	1 00
Best ten varieties large and showy, G. P. Peffer	5 00
Second best, F. W. Loudon, Janesville	3 00
Third best, A. G. Tuttle	2 00
Best plate Red Astrachan, G. P. Peffer	1 00
Best plate Duchess of Oldenburg, A. G. Tuttle	1 00
Best Plate St. Lawrence, J. C. Plumb	1 00
Best plate Fameuse, A. G. Tuttle	1 00
Best plate Utter, J. C. Plumb	1 00
Best plate Plumb's Cider, J. C. Plumb	1 00
Best plate Seek no Further, G. P. Peffer	1 00
Best plate Willow Twig, G. P. Peffer	1 00
Best plate Ben Davis, G. P. Peffer	1 00
Best plate Talman Sweet, G. P. Peffer	1 00
Best plate Golden Russet, G. P. Peffer	1 00
Largest apple, G. P. Peffer	1 00
Heaviest apple, F. W. Loudon	1 00

PEARS.

Best display of varieties, G. P. Peffer	$3 00
Best three varieties, G. P. Peffer	2 00
Best Flemish Beauty, G. P. Peffer	2 00

PLUMS.

Best and greatest variety, G. P. Peffer	$3 00
Best Miner, J. C. Plumb	2 00
Second best, G. P. Peffer	1 00
Best native or wild, G. P. Peffer	1 00

Judges — D. T. PILGRIM, A. J. PHILIPS, HENRY TARRANT.

GRAPES.

Best display varieties, Wm. Reid	$10 00
Second best, L. L. Kellogg, Janesville	7 50
Third best, F. W. Loudon	5 00
Best ten varieties, L. L. Kellogg	7 50
Second best, F. W. Loudon	5 00
Third best, Wm. Reid	3 00
Best five varieties, L. L. Kellogg	3 00
Second best, Wm. Reid	2 00
Third best, F. W. Loudon	1 00
Best three varieties, J. C. Plumb & Son	3 00
Second best, L. L. Kellogg	2 00
Third best, F. W. Loudon	1 00
Best two varieties, J. C. Plumb & Son	2 00
Second best, Wm Reid	1 00
Best single variety, F. W. Loudon	2 00
Second best, Wm. Reid	1 00
Best three bunches Concord, Wm. Reid	2 00
Second best, F. W. Loudon	1 00
Best three bunches Delaware, Wm. Reid	2 00
Second best, F. W. Loudon	1 00
Best single variety, quality to rule, F. W. Loudon (Delaware)	3 00
Second best, N. N. Palmer (Worden)	2 00
Best show foreign, G. P. Peffer	3 00

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CRABS.

Best and greatest variety named, Wm. Finlayson, Mazomanie	$3 00
Second best, A. G. Tuttle	2 00
Third best, G. P. Peffer	1 00
Best plate Hyslop, L. L Kellogg	1 00
Best plate Transcendant, D. M. Aspinwall, Farmington	1 00
Best plate Seedling, J. C. Plumb (Lake Winter)	2 00
Second best, G. P. Peffer (Belleflower)	1 00

SWEEPSTAKES.

Best collection of all kinds, G. P. Peffer (147 kinds)	$7 50
Second best, L. L. Kellogg (50 kinds)	5 00
Third best, Wm. Reid	3 00

Judges — F. S. LAWRENCE, S. G. WILLIAMS, E. L. DIMOCK.

FRUIT BY NON-PROFESSIONAL CULTIVATORS.

APPLES.

Best display of varieties, Geo. Jeffrey, Smithville	$10 00
Second best, B. B. Olds, Clinton	7 50
Third best, James Ozanne, Somers	5 00
Best ten varieties adapted to the northwest, Geo. Jeffrey	7 00
Second best, D. Huntley, Appleton	5 00
Third best, B. B. Olds	3 00
Best show ten varieties, large and showy, Geo. Jeffrey	5 00
Second best, James Ozanne	3 00
Third best, B. B. Olds	2 00
Best five varieties adapted to the northwest, Geo. Jeffrey	3 00
Second best, B. B. Olds	2 00
Third best, James Ozanne	1 00
Best variety winter, Geo. Jeffrey	5 00
Second best, James Ozanne	3 00
Third best, B. B. Olds	2 00
Best five varieties winter, B. B. Olds	3 00
Second best, James Ozanne	2 00
Third best, Geo. Jeffrey	1 00
Best plate Red Astrachan, B. B. Olds	1 00
Best plate Duchess of Oldenburg, Geo. Jeffrey	1 00
Best plate Fameuse, D. Huntley	1 00
Best plate St. Lawrence, B. B. Olds	1 00
Best plate Plumb's Cider, D. Huntley	1 00
Best plate Seek no Further, Geo. Jeffrey	1 00
Best plate Talman Sweet, Mark Honnisett, Center	1 00
Best plate Golden Russet, B .B. Olds	1 00
Best plate Ben Davis, B. B. Olds	1 00
Largest apple, Geo. Jeffrey	1 00
Heaviest apple, Geo. Jeffrey	1 00

PEARS.

Best display varieties, Geo. Jeffrey	3 00
Second best, D. T. Pilgrim, West Granville	2 00
Third best, James Ozanne	1 00
Best three varieties, Geo. Jeffrey	2 00
Second best, James Ozanne	1 00
Best Flemish Beauty, D. T. Pilgrim	2 00

PLUMS.

Best and greatest variety, D. T. Pilgrim	3 00
Second best, Geo. Jeffrey	2 00
Third best, Mark Honnisett	1 00
Best Miner, Mark Honnisett	2 00
Best native or wild, C. C. Fisher, Centre	1 00

Judges — M. J. PLUMB, C. H. GREENMAN.

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GRAPES.

Best display of varieties, F. S. Lawrence, Janesville	$10 00
Second best, V. Lowe, Palmyra	7 50
Best ten varieties, F. S. Lawrence	7 50
Best five varieties, F. S. Lawrence	3 00
Best three varieties, F. S Lawrence	3 00
Second best, Mark Honnisett	2 00
Best two varieties, F. S. Lawrence	2 00
Best single variety, S. G. Williams, Janesville	2 00
Second best, F. S. Lawrence	1 00
Best three bunches of Concord, F. S. Lawrence	2 00
Second best, Mark Honnisett	1 00
Best three bunches of Delaware, F. S. Lawrence	2 00
Second best, Mark Honnisett	1 00
Best single variety, quality to rule, S. G. Williams	3 00
Second best, F. S. Lawrence	2 00

CRABS.

Best and greatest variety named, D. T. Pilgrim	$3 00
Second best, J. Baldwin, Brooklyn	2 00
Third best, Geo. Jeffrey	1 00
Best plate Hyslop, C. C. Fisher	1 00
Best plate Transcendent, C. C. Fisher	1 00

SWEEPSTAKES.

Best collection of fruit, Geo. Jeffrey	$7 50
Second best, James Ozanne	5 00
Third best, D. T. Pilgrim	3 00

Judges — A. G. TUTTLE, N. N. PALMER, J. A. PEFFER.

SEEDLING APPLE.

[Fruit to be exhibited five years in succession.]

Best, D. M. Aspinwall,	Diploma or $10 00
Second best, G. P. Peffer	5 00

Judges — C. H. GREENMAN, B. B. OLDS.

NURSERY TREES.

Best collection deciduous nursery grown trees, J. C. Plumb & Son.	Diploma.
Best collection of evergreens, J. C. Plumb & Son	Diploma.
Best collection fruit trees, J. C. Plumb & Son	Diploma.
Best collection hardy flowering shrubs, J. C. Plumb & Son	Diploma.
Best collection apple trees, J. C. Plumb & Son	Diploma.

Judges — C. H. GREENMAN, B. B. OLDS.

FLOWERS BY PROFESSIONAL CULTIVATORS.

Best floral design, Wm. Kitzrow, Milwaukee	$5 00
Second best, Mrs. A. H. Caldwell, Janesville	3 00
Best collection cut flowers, Wm. Kitzrow	4 00
Best pyramidal bouquet. Wm. Kitzrow	3 00
Second best, R. P. Allen, Janesville	2 00
Best pair flat bouquets, Wm. Kitzrow	2 00
Second best, Mrs. A. H. Caldwell	1 00
Best bouquet everlasting flowers, Wm. Kitzrow	3 00
Best ten named dahlias, J. C. Plumb & Son	2 00
Second best, Mrs. A. H. Caldwell	1 00
Best display roses, Mrs. A. H. Caldwell	4 00
Second best, Wm. Kitzrow	3 00
Best five named roses, Wm. Kitzrow	3 00
Second best, Mrs. A. H. Caldwell	2 00

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Best display verbenas, Wm. Kitzrow	2 00
Second best, Mrs. A. H. Caldwell	1 00
Best show seedling verbenas, R. P. Allen	2 00
Second best, Mrs. A. H. Caldwell	1 00
Best show pansies, Mrs. A. H. Caldwell	1 00
Best show double petunias, Mrs. A. H. Caldwell	1 00
Best show gladiolas, Wm. Kitzrow	1 00
Second best, Mrs. A. H. Caldwell	50
Best show greenhouse plants, not less than 50 varieties, Wm. Kitzrow	7 50
Second best, R. P. Allen	5 00
Third best, Mrs. A. H. Caldwell	3 00
Best twenty varieties greenhouse plants in bloom, Wm. Kitzrow	3 00
Second best, R. P. Allen	2 00
Best ten geraniums, Mrs. A. H. Caldwell	3 00
Second best, Wm. Kitzrow	2 00
Best six fuchsias, R. P. Allen	2 00
Second best, Wm. Kitzrow	1 00
Best display flowers of all kinds, raised by exhibitor, Wm. Kitzrow	5 00
Second best, R. P. Allen	3 00
Best display ornamental foliage plants, not more than fifteen varieties, Wm. Kitzrow	3 00
Second best, R. P. Allen	2 00

Judges — F. W. CASE, MRS. A. A. BOYCE, MRS. F. S. LAWRENCE.

FLOWERS BY NON-PROFESSIONAL CULTIVATORS.

Best floral design, Mrs F. S. Lawrence, Janesville	5 00
Second best, Mrs. E. R Copeland, Monroe	3 00
Third best, Miss Kate Peffer, Pewaukee	2 00
Best collection cut flowers, Miss Kate Peffer	4 00
Second best, Miss Emily T. Smith, Green Bay	3 00
Third best, Mrs. E. R. Copeland	2 00
Best and most tastefully arranged basket of flowers, Miss Kate Peffer.	3 00
Second best, Mrs. E. R. Copeland	2 00
Best pyramidal bouquet, Mrs. F. S. Lawrence	3 00
Second best, Miss Kate Peffer	2 00
Best pair round bouquets, Miss Kate Peffer	3 00
Second best, Mrs. E R. Copeland	2 00
Best pair flat bouquets, Miss Kate Peffer	2 00
Second best, Mrs. Robt. Boyd, Evansville	1 00
Best bouquet everlasting flowers, Mrs. Robt. Boyd	3 00
Second best, O. P. Freeborn, Milton	2 00
Best display dahlias, not more than twenty varieties, Miss Kate Peffer	3 00
Second best, Mrs. A. A. Boyce, Lodi	2 00
Best ten named dahlias, Miss Kate Peffer	2 00
Second best, J. C. Plumb & Son	1 00
Best display verbenas, Miss Kate Peffer	2 00
Second best, Mrs. E. R. Copeland	1 00
Best ten named verbenas, Miss Kate Peffer	2 00
Second best, O. P. Freeborn	1 00
Best show seedling verbenas, Mrs. E. R. Copeland	2 00
Second best, O. P. Freeborn	1 00
Best show asters, O. P. Freeborn	2 00
Second best, Miss Emily T. Smith	1 00
Best show perennial phlox, Miss Kate Peffer	1 00
Second best, Mrs. Wm. Paul, Milton	50
Best show pansies, Miss Kate Peffer	1 00
Second best, Mrs. Robert Boyd	50
Best show double petunias, Mrs. Robt. Boyd	1 00
Second best, Mrs. E. R. Copeland	50
Best show pinks, Mrs. Robt. Boyd	1 00
Second best, Miss Kate Peffer	50

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Best show gladiolas, Miss Kate Peffer..... 1 00
Second best, Mrs. F. S. Lawrence..... 50
Best show phlox drummondii, Miss Kate Peffer..... 1 00
Second best, Mrs. E. R. Copeland..... 50
Best show stocks, Mrs. E. R. Copeland..... 1 00
Second best, Miss Kate Peffer..... 50
Best show balsams, Mrs. Robt. Boyd..... 1 00
Second best, Miss Emily T. Smith..... 50
Best show greenhouse plants, Mrs. F. S. Lawrence..... 5 00
Second best, Mrs. S. A. Whittier, Janesville..... 3 00
Best ten varieties greenhouse plants in bloom, Mrs. S. A. Whittier... 3 00
Second best, Mrs. F. S. Lawrence..... 2 00
Best ten geraniums, Mrs. F. S. Lawrence..... 3 00
Second best, Mrs. S. A. Whittier..... 2 00
Best six fuchsias, O. P. Freeborn..... 2 00
Best display flowers raised by exhibitor, Miss Kate Peffer..... 5 00
Second best, Mrs. F. S. Lawrence..... 3 00
Best ornamental foliage plants, not less than ten, Mrs. F. S. Lawrence 3 00
Second best, O. P. Freeborn..... 2 00

VICK'S SPECIAL PREMIUMS.

Best collection cut flowers, Mrs. E. R. Copeland..... 20 00
Second best, Mrs. Robert Boyd..... 10 00
Third best, Miss Emily T. Smith..... 5 00
Fourth best, O. P. Freeborn..... floral chromo.
Best ornamental floral work, Mrs. Robert Boyd..... 5 00

E. B. HEIMSTREET'S SPECIAL PREMIUMS.

Best collection cut flowers, Miss Gertie Kellogg..... Canary and gilt cag
Second best, Mrs. E. R. Copeland..... Foot globe and four gold fish
Largest Sun Flower, Mrs. J. P. Thomas..... Set garden tools

Judges — WM. FINLAYSON, WM. KITZROW, D. T. PILGRIM.

Best exhibition by local horticultural society, Milton Horticultural Society..... $10 00

Judges — C. H. GREENMAN, B. B. OLDS.

PREMIUMS AWARDED AT JUNE MEETING

By Janesville Horticultural Society.

Best and greatest variety of strawberries, B. F. Adams, Madison..... 5 00
Second best, F. W. Loudon, Janesville..... 3 00
Third best, Geo. J. Kellogg, Janesville..... 2 00
Best plate of Wilson, Geo. J. Kellogg..... 1 00
Second best, J. M. Smith, Green Bay..... 50
Best plate other than Wilson, B. F. Adams..... 1 00
Second best, J. M. Smith..... 50
Largest berries, B. F. Adams..... 1 00
Second largest, Geo. J. Kellogg..... 50
Best show of plants in bloom, Mrs. F. S. Lawrence, Janesville..... 5 00
Second best, Mrs. James Sutherland, Janesville..... 3 00
Third best, O. P. Freeborn, Milton..... 2 00
Best pair bouquets, Mrs. James Sutherland..... 2 00
Second best, Miss Kate Peffer, Pewaukee..... 1 00
Best show of roses, Mrs. F. S. Lawrence..... 3 00
Second best, Mrs. S. G. Williams, Janesville..... 2 00
Best collection of cut flowers, Miss E. Smith, Green Bay..... 3 00
Second best, Miss G. Kellogg, Janesville..... 2 00
Best floral design, O. P. Freeborn..... 4 00
Second best, Mrs. F. S. Lawrence..... 3 00
Third best, Mrs. Geo. J. Kellogg..... 2 00

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REPORT OF COMMITTEE ON EXHIBITION OF FRUIT.

The committee appointed to examine the fruit on exhibition at the annual meeting, would report that they were disappointed in finding so many varieties of apples represented in a season so marked for its scarcity of fruit. The following exhibits were presented and considered:

Twenty varieties of standard apples and ten seedlings, exhibited by Geo. P. Peffer, of Pewaukee. One of the seedlings, named the Oakland, has been entered and exhibited as competitor in the five years' test for best seedling.

Messrs. Stickney & Baumbach exhibit five fine varieties of apples raised in Wisconsin, and large, showy specimens of Ben Davis from Illinois.

J. C. Plumb, of Milton, exhibits very good specimens of Plumb's Cider, and also fine samples of his new winter crab, the "Lake Winter." Its keeping qualities seem to be very good, and as a winter crab it is well worthy of notice.

Specimens of Drap d' Or and Fameuse, were exhibited by A. G. Tuttle.

Specimens of Fameuse, raised by J. C. Lander, of Madison, the tree having produced nine bushels the past season.

Geo. J. Kellogg had on the tables very fine specimens of Willow Twig, raised in Illinois.

Senator Bones showed a fine lot of fair, high colored apples, raised on his farm near Racine, called the Richfield Non Such; also two varieties for a name, which were pronounced Dumelow's Seedling and White Winter Pearmain.

Samples of large, red cranberries were shown from the marsh of Case & Tuttle, and white ones grown on marsh of Goodyear & Son, near Mather's Station.

Very fine specimens of wax fruit, Whitney's No. 20, and samples of cider, cider wine and vinegar were exhibited by the noted orchardist of northern Illinois, A. R. Whitney.

Samples of syrup and sugar made from the Early Amber sugar cane of Minnesota, were exhibited by A. J. Philips, of West Salem, which were pronounced very superior articles in that line.

Very superior samples of honey were presented by G. W. Sandford, of Middleton.

A model of a tree digger made by J. R. Whitney, of Franklin Grove, Illinois, was exhibited, and seems to be a very good machine for digging trees, and root pruning in the nursery, when customers are in a hurry and business is pressing.

Messrs. Thompson & Son exhibited a fine assortment of evergreens and young trees, consisting of Norway Spruce, Austrian, Scotch, Norway and Dwarf Mountain Pine, Larch, Ash, Honey Locust, Barberry and apple stock.

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Your committee would recommend to farmers who desire to set extensively of evergreens, to purchase young trees, on account of cheapness, less labor in setting, and being more likely to live.

C. H. GREENMAN,
A. J. PHILIPS.

REPORTS OF COMMITTEE OF OBSERVATION.

FIRST DISTRICT.

H. M. THOMPSON, ST. FRANCIS, COMMITTEE.

COUNTIES — *Kenosha, Racine, Milwaukee, Ozaukee and Washington.* — The effect upon vegetation, produced by the winter of 1876-7, was seen in many kinds of fruit trees being killed outright, showing no signs of life whatever in spring, when trees put forth their foliage. Many apple trees, 20 to 40 years old, made a feeble growth at first and showed unmistakable signs of an impaired vitality, and nearly all of them died in June, July and August. The disastrous effects of the sudden changes of temperature, and the severe northwest winds of the previous winter resulted in greater injury to fruit trees in the older orchards than has occurred in any previous year. The bark of nearly all the injured trees, separated from the northwest sides of the trees.

The crop of apples was much lighter than in any previous year since the trees came into full bearing. Tallman Sweet, Golden and Perry Russets, Fall Orange, Fall Stripe, Pennock, Red Winter, Domine, Red Gillflower, and Fameuse were the only kind of apple trees under my observation that bore full crops. The fruit, although limited in quantity, was unusually fine, being almost entirely free from the depredations of the codling moth.

The plum and cherry trees failed to produce a crop. The Kentish cherry trees, planted on my place in 1836, were much injured. As this variety is generally acknowledged to be hardy in the northwest, and as young trees of the same variety, standing near the original trees, were uninjured, except in the fruit buds, it is to be presumed that the injuries are largely attributable to impaired vitality, caused by over-cropping, eight trees having produced over $500.00 gross returns, for two successive crops. Having experimented with the planting of many different varieties, I find none as hardy as the true Kentish cherry, standing on its own roots. The variety was introduced into Western New York, near Buffalo, from Chittenden county, Vermont, and brought from there to Milwaukee county, and distributed to several sections of this state.

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Strawberries in bountiful yield made the small fruit growers content with the low price received for the fruit.

Observations, extending over a period of forty years, in the once timber regions of the lake shore counties, and in every county south of a line extending from Green Bay to the Mississippi river, conclusively demonstrate the deleterious climatic changes produced by the agency of man, in the destruction of forests. Peaches were, in former times, a more bountiful crop than apples are now, and with the completion of forest destruction now taking place in the northern and northwestern portions of the state, soon to be accomplished at the present rate, the summer must continue to become hotter and drier, the distribution of rain-fall more irregular, and a winter climate equaling in severity that of northwestern Minnesota and other extreme northern treeless regions, destitute of favorable climatical, physical agencies must prevail.

SECOND DISTRICT.

J. C. PLUMB, MILTON, COMMITTEE.

COUNTIES — *Rock, Walworth, Green, Dunn, La Fayette, Iowa and Grant.* — In common with all of southern Wisconsin and northern Illinois and Iowa, we have to report the almost total absence of the apple crop the past season. This we predicted in the closing words of our report for last year; "for the excessive fruitage of the past year has been a large draft upon the resources of the tree, and also promoted the increase of our insect foes." As 1876 will long be remembered as "the great apple year," so we will not forget the general dearth of apples the past year. This may be traced to various and combined causes, among them we enumerate: Exhaustion from excessive fruitage the previous year; the continued rains of last autumn preventing perfect maturity of wood in many locations, followed by the severe cold of early winter. The morning of December 9, the mercury marked 25° below zero, which was a very severe change for unripened wood. In January following, the mercury was below zero five times: the 3d inst. —12°; the 8th —18°; the 13th - 22°; the 22d —6 , and the 23d — 23°. Then in March, three times below: the 10th —15°; the 15th —8°; the 17th — 28°; which was the lowest of the winter of 1876]—7, at Milton.

February was very mild throughout, the snow and frost leaving the ground, but the abundance of rain fall prevented injury to the roots of trees or plants. A careful examination in February showed tender varieties of apples in young nurseries killed to the ground; apple buds somewhat injured, but not so generally as the cherry, nearly all dead. After the cold snap of March which fol-

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lowed the long warm term of February, examination showed the apple buds largely dead, and the same injury to the currant. The Lombardy poplar, the maples and other deciduous trees were injured to a large extent through the northwest as far south as central Illinois.

We will note here a remarkable fact, and one very instructive. In the latitude of Green Bay, and further north, the currant crop was, as usual, very abundant, and the apple crop a full average one for that latitude; and a pear orchard in that vicinity, of 15 years planting and 12 years bearing, of several choice varieties produced a full crop of fine, well grown fruit, Now these pear trees and currant bushes experienced a lower temperature by many degrees than the same varieties in a more southern locality which bore no fruit, but they were grown "in and for the climate," and upon the coldest slope, and they had not been weakened by so much mild mid-winter.

In this district, grapes and strawberries gave us a bountiful crop, as usual, and raspberries, on medium lands, not too much grown and injured by winter, also gave a full crop. The first autumn frost came on the 5th of October, and not until the 1st of November did we have any severe freezing, which gave all varieties of grapes full time to mature fruit and wood perfectly. The cold snaps of October and November checked growth, but the mild, even weather of December prolonged the maturing season through the year 1877, and should the winter pass without great extremes of cold, we may expect another year of abundant fruiting of the hardy fruits. There is an unusual development of fruit buds; indeed, the *dormant growth* has hardly ceased for more than a few days since the winter set in.

This district is not an exception to the general depression of the fruit growing interest of this latitude, but should the present prospects for fruit be realized, new courage will inspire the planter to extend largely the area of orcharding. The canker worm has devastated some entire orchards, but the application of a mild solution of arsenic in water will prove a remedy (one pound to sixty gallons of water is found strong enough). The arsenic should be boiled in a gallon of water sometime, and then added tto the rest, and applied with a powerful syringe or force pump t he whole tree when coming into leaf in May.

The codling moth is our great enemy, but we have great hopes from the "summer bands" and careful destruction of the larva in the chrysalis stage. Promiscuous planting of anything that offers is a thing of the past, and intelligent planters are settling the question of varieties, by personal observation of the successful varieties and modes of culture. In this way we are making intelligent progress in fruit growing in southern Wisconsin.

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FOURTH DISTRICT.

A. L. HATCH, ITHACA, COMMITTEE.

COUNTIES— *Sauk, Richland, Crawford and Vernon.* — Thawing and freezing weather during the winter of 1876 occasioned much that is termed sun-scald upon fruit trees. The Hislop and Transcendent were specially subject to it. Patches on the bark from an inch or less in diameter to a foot or more in length, would often be found on trees from six to ten years old. Some were entirely killed by it, others badly scarred. It would occur on all sides of the trees. Contrary to our expectations, the injury to trees, especially young ones, was quite general. Golden Russet. Pewaukee, Fall Spitzenburg and some others were seriously injured by winter killing. The Walbridge failed to bear its usual amount of foliage. The injury to the Walbridge seemed to be principally to the buds. Our Russian apples, of which we have a large variety, gave us fine foliage; apparently they were unhurt by cold or thawing.

Raspberry bushes were injured in an unusual way. Warm weather during winter seemed to have started the buds some; for this reason the bushes produced generally only about half a crop.

The adaptation of varieties to different soils seemed to be much more marked than we ever noticed before. On sandy soil the Fall Spitzenburg is very successful. On clay ridge land it is a very poor tree; Utter being far better. On heavy timber land, maple and basswood predominating, the Fameuse was badly injured by the winter's cold. On brush-oak land ridges, it is all we can ask.

Apples were about an entire failure as a crop, except now and then some crab apple trees bore well. Strawberries were abundant and cheap, though not of the finest quality, in many instances, owing to the unfavorable weather. Raspberries, about half or quarter of a crop. Grapes a fair crop, but did not ripen as well as they would if rains had been more frequent after they commenced to color. The Janesville has proven most productive with us.

FIRE-BLIGHT, this dreaded disease of apple trees, appeared again last season and caused much injury to trees generally. The crab apple trees suffer most generally, but Golden Russet, Alexander, and some other large apples seem very prone to it. At the mouth of valleys opening into larger ones, like those into the Wisconsin valley, there seems to be less liability to it. This is doubtless owing to the peculiar modification of air at such places.

TEMPERATURE. During October, November and December, '77, the lowest degree of cold at our place did not exceed 6°. At the same time in the valleys two to four miles away the mercury

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indicated —12° to —14°, a difference of eighteen or twenty degrees. This month, January, severest cold —20° in the valleys and —10° at our place. So far trees are not injured by cold. Only two days occurred during December when the mercury was above 60°, and buds have not started perceptibly. Altogether the prospect for a good fruit season for 1878 is very encouraging.

We heard complaint by an extensive grape-grower, of the Delaware dropping its foliage before the fruit was mature.

The Curculio seem to find congenial bowers in our wild plum trees. Would it be an advantage to cut down all native plum trees, with a view of starving them out? They were so numerous in 1876 as to sting our crab apples, but no eggs were perfected in the fruit.

A moderate number of trees were planted last season. The planting of evergreen trees is becoming more general, especially in cemetery lots. On sandy soil the Balsam fir is most satisfactory. Norway Spruce sometimes browns at top during winter. Austrian Pine does here almost every winter. Scotch Pine is very fine.

FIFTH DISTRICT.

E. W. DANIELS, AURORAVILLE, COMMITTEE.

COUNTIES — *Green Lake, Waushara, Marquette and Winnebago.* The apple crop in this, as in other districts, was nearly a failure, not enough for our own consumption. The Duchess of advanced age bore good crops, but young trees had very few. Fall Orange, St. Lawrence, Snow, Pewaukee and Transcendent had good crops, and Perry Russet good as usual. The Russian varieties produced about half crops. All kinds sold here for a good price. My Hinkley plums blasted and fell immediately after the bloom. Winnebagos were a light crop. My tame plum and pear trees are too young to bear, but look well in the nursery. My experience in planting trees is that, if expected to live and make a growth, they should not be planted after such winters as that of 1874–5, unless they were heeled in very deep the fall before. I found the greatest fatality in trees after that cold winter. The past two winters have been very different, and only from four to five per cent. have been lost, so far as heard from. I think no harm has been done the fruit buds by the warm weather this winter. The grape crop was by far the best, so far as I can hear, of any previous year. I had nineteen pounds of Concord on one hill, and twelve pounds on many others. I think some of my Delaware and Rogers had twelve pounds to the hill. My Janesvilles are young, but think they will be my best bearers; and their earliness makes them a profitable crop. I have not seen a

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particle of mildew on my grapes, and the fruit was never so sweet as last year. They are in good condition at this time, January 30. Raspberries were an extra crop. "Mammoth Cluster" is my favorite. Currant and strawberry, very light crop. One vegetable product was superabundant, viz.: honey. The blight was next to nothing on pear, apple or crab trees in this district, and the same in Waupaca, Wood and Portage counties.

Cranberries were, as you know, a heavy crop, and those not picked too early ripened fully on the vines, but the price did not come up to previous years. Norway Spruce planted in August and September lived, without an exception. I set a few last Christmas and will report progress.

SIXTH DISTRICT.

M. L. CLARK, NEW LISBON, COMMITTEE.

COUNTIES — *Monroe, Juneau and Adams.* — Somewhat of a revival took place in this district, last spring, in fruit tree planting, especially in Juneau and Monroe counties. It received its stimulus from the large crop of fruit in 1876, and from horticultural addresses, essays and discussions, presented through the local horticultural society, and the valuable Reports from this society. Many new orchards were planted, and missing trees in old ones replaced. The early settlers planted all varieties in our sandy soil and changeable climate; but they found, after years of unsuccessful toil, that a departure from eastern practice would have to be taken, if fruit growing was to be made a success, and now more attention is paid to the selection of sound and healthy trees, to their hardiness and adaptation to our climate and soil. Locations, high and low, wet and dry, protection by belts of timber, slopes, are all carefully noted before planting, The conclusions arrived at by most of our successful fruit growers are, that sound and healthy trees must be selected, and those of the very hardiest varieties; that trees must be lifted from the nursery row in the fall and buried through the winter; that trees must be heavily mulched, summer and winter; that our soil requires lime, potash and barnyard manure to produce perfect trees and fruit; that elevated situations are preferable, and protection by belts of timber is desirable; that pruning should be done by rubbing off all superfluous buds, and in no case allow a limb to exceed one year's growth before removing it with the knife.

Some who, having very unfavorable situations, a low, wet soil, or that which is very sandy, are discouraged with the apple, and are planting only the crab; mainly the Tetofsky and Duchess of Oldenburg, and but few of each. The Tetofsky is perfectly "iron

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clad" with me, and wherever I have seen it growing, on the many different soils of this district, it has shown itself to be the hardiest tree planted, and adapting itself to all soils and situations, except a wet one. The Duchess is universally giving satisfaction as a hardy tree, and is being extensively planted. It is an early and heavy bearer, when good cultivation is given it, and a profitable tree to plant. The Haas has given me perfect satisfaction as a hardy tree. Under good cultivation, it is a good and thrifty grower, and an early bearer. We have lost none of these trees by cold winters, but they are more liable to be affected by the sun on the southwest side than the Tetofsky or Duchess. The Fameuse, Plumb's Cider, Utter's Red, Ben Davis, Golden Russet, Tallman Sweet and Red Astrachan, are giving fair satisfaction, while many other varieties that are planted here are favorites with some, and severely condemned by others.

The fire blight has done no particular damage this season. Now and then a tree has been affected by it, but I have so far been able to control the twig or leaf blight by the use of ashes, salt and lime, and heavy mulching; but some of my trees will blight on the body, and I have, so far, been unable to prevent it. It is first seen as a small, dark colored spot on the bark, which soon commences to adhere firmly to the wood. If left to do its work without any interference, it will in a short time girdle the tree and kill it. I can check each spot when first seen, by cutting the bark entirely away, then washing with weak lye and waxing over; but cannot, as yet, prevent its appearance. Those affected the worst are the Ben Davis, Transcendent, Haas, and Flemish Beauty pear.

The canker worm made its appearance here this season, but did no particular damage. In the vicinity of Elroy a beetle did much damage to young trees, by cutting off the tender limbs.

A very small crop of apples was gathered this season. In fact, all varieties of fruit, both wild and cultivated, yielded very lightly, with the exception of strawberries, cranberries and blueberries. The strawberry plants came out of the winter in good condition, and the crop was exceedingly large. The Wilson is principally cultivated, though the Col. Cheney is highly recommended by all who have cultivated them, and if its present reputation is sustained, it will take the lead of the Wilson. The raspberry was badly damaged by the winter. Many plantations did not produce over one-third of a crop, and, consequently, prices for the berry ruled high, but sales were slow as, consumers could not see why they should pay twenty cents for raspberries, when they had to pay only five to ten cents for strawberries. The Davison's Thornless was killed nearly to the ground. The Mammoth Cluster came out a little better, while the Doolittle proved much the hardiest. No red raspberries are cultivated here for market. The only disease I have heard of is the red rust. Lime, sifted on the plants, has proved, with me, a safe and sure remedy for this disease.

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The grape crop was an average one. The vines, covered with earth through the winter, came out very poorly. The canes looked bright and healthy, but the buds refused to push for a long time, and then made a very feeble growth. Those covered lightly with marsh hay, or straw, made a good growth and bore a fair crop of fruit. The Concord is mostly cultivated, while the Delaware is being largely planted.

The currant, plum and pear crop was a total failure. The winter was very severe on the plum trees. Pear trees came through much better. Not one of my pear trees was injured in root or branch, but many of my plums were killed, and all were badly damaged. Those grafted on wild stock came out the best. The Miner came through the winter all right, but bore no fruit.

The cranberry produced an average amount of fruit; but much of it was harvested so green that they were not up to the usual standard in quality. Many growers were fearful of early frost, and made unnecessary haste to secure their crop. Cranberry growing, in this district, is very extensive, and many thousand dollars are annually expended in improving marshes. The crop harvested annually is enormous, and is increasing largely every year. The estimates of the crop, in this state, for 1877, as made by Messrs. Stanley & Sons, of Chicago, who deal largely in this fruit, are, for the marshes about Berlin, 12,000 barrels; for Wood county, 5,500 barrels; Juneau county, 1,000 barrels; Monroe county, 3,500 barrels; Portage county, 1,500 barrels; and all other counties, 1,200 barrels; total, 24,700 barrels. The estimates, based on the amount reported by some of the railroads, would be something over these figures in some portions of the state, but they are so incomplete that no definite calculation on them can be arrived at.

SEVENTH DISTRICT.

D. HUNTLEY, APPLETON, COMMITTEE.

COUNTIES — *Outagamie, Shawano and Waupaca.* It is still a problem whether this locality will ever be able to raise its own fruit. I have resided in this county some twenty-eight years, and a few commenced setting apple trees very soon after, so that there are, or should be, trees here twenty-five years old, but I know of but one or two orchards in the county that have any trees left of the first settings, or over twenty years of age, and only one or two Tallman Sweets at that, all other varieties planted early, and nine-tenths of the trees planted prior to 1860 are gone. Then we began to hunt for hardy varieties, something adapted to this climate, with varied success. The Siberians did not kill; here was one point gained. The Duchess also was found to be nearly as hardy.

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Many are only setting Siberians; if we can get those that will keep through the winter, and of good quality without the crab taste, we shall have gained a good deal. Our local horticultural society has set quite largely of J. C. Plumb's Lake Winter, and are willing to give any new kind, which promises to be hardy, a trial. The winter thus far has been very favorable for fruit trees, and we are expecting a good fruit year. We had scarcely any apples last season; the small fruit crop was also light, especially strawberries and the Black Caps. Do not remember of seeing any blight in this locality last summer. Some think it was owing to the extreme dry season, and the consequent slow growth. It is certain that the most rapid growing kinds, and those that grow in the early part of the season, blight the worst. The remedy would be, but little cultivation and no manure. The grape crop was a good one, mostly of Concords and Delawares. Our society are much pleased and interested in the published transactions of the State Horticultural Society. The good that society is doing to the general farmer of the state cannot be reckoned in dollars and cents.

EIGHTH DISTRICT.

J. H. FELCH, AMHERST, COMMITTEE.

COUNTIES — *Portage and Wood, and the Valley of the Upper Wisconsin* — The amount of tree planting for the past two years, in this district, has been comparatively small, but on account of the season's being more favorable, a larger per cent. have lived. There is but little interest in fruit raising. The people are mostly discouraged. There was but very little fruit of any kind the past season. Trees have been very free from blight in general. Previous to the late severe winters there were several orchards in this county that yielded from fifty to one hundred bushels of apples, yearly, but now I know of no orchard of old, standard trees, worthy the name. The Duchess of Oldenburg has stood the winters the best of any. Most of the planting has been done on sandy or prairie soils, but trees have wintered the best on high, clayey soil. It is hoped that the heavy timbered regions will be more favorable for fruit than the open country, but they have not yet been thoroughly tested.

Pears, cherries and plums are an entire failure in this district, and only a few of the hardiest apples are grown in favorable localities. The different kinds of crabs are the main dependence. Small fruits can be grown here in abundance; but no one has yet thoroughly tested their capabilities. The cranberry marshes in this district have not yet answered the expectations of their owners. Drought, insects and early frosts are the causes of failure.

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A number in the vicinity of Stevens Point have put in machinery for irrigating and regulating the supply of water, by which they hope to make success a certainty.

NINTH DISTRICT.

A. J. PHILIPS, WEST SALEM, COMMITTEE.

COUNTIES.— *La Crosse, Trempealeau, Jackson, Buffalo, and Valleys of Chippewa and St. Croix.*— The report from this district will necessarily be brief, owing to limited observation and a limited disposition of correspondents in remote parts of the same to give any information on the subject. Of fruit, in this district the past season, but little was raised; even our old standby, the currant, failed to produce a crop. The only full crop I have heard of in the state was that of J. M. Smith, our worthy president, and I account for that as an instance of fortune favoring the good. The only fruit I saw in abundance was strawberries. Brother Wilcox, of Trempealeau, reports some standard apples setting fruit, but they soon showed signs of feebleness, and finally, in connection with a long continued drought and the ravages of worms, dropped from the trees. Mr. Merringer, of Buffalo county, writes me that he has sixteen hundred grape vines, and had a fair crop last season. But on the whole, everything in the shape of fruit trees, vines or bushes, both cultivated and wild, gave unmistakable evidence of having overdone in the season of 1876. Doubtless the cold spring of 1877 had something to do with the failure. Thus far the present winter has been very mild; the thermometer running as high as 60° in December, and it continued so mild and warm that fears were entertained that the buds would swell so as to injure fruit the coming season. But so far as I can learn from recent examinations, no serious damage has been done. Present appearances indicate that trees are wintering well, and are well filled with fruit buds for next season, and growers are in hopes of gathering a fair crop of apples and other fruit. Although many are discouraged in tree planting, I find there has been some six or seven thousand dollars worth of trees sold in this district during the past year, which convinces me that all have not given up the business. My friend Wilcox says "his faith is in nowise weakened, and the greatest drawback to success in apple raising is the stupidity of the people in refusing to progress on this subject; potatoes rotted, but farmers stuck to them; bugs came, but they fought them to the bitter end; hogs died of cholera, but they sought for remedies; chinch bugs destroyed the wheat, but farmers hung on; but when a tree planter loses a few trees by cold, sun or neglect, he is ready to throw up the sponge and pronounce fruit growing in this lati-

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tude a humbug." Mr. Wilcox also referred me to a county agricultural society in this district which, at its annual fair, offered a premium of eight dollars on apples and three hundred and seventy-five dollars on horses and mules; certainly not offering much encouragement to the fruit grower.

As to blight, we have had but little so far as my knowledge extends, the past season, and we hope it is, like the other plagues, passing away. From observation in my own and other orchards in this vicinity, I find that the varieties of standard apples that are doing the best, are Duchess of Oldenburg, Wealthy, Fameuse, Haas, Tetofsky, Pewaukee, Walbridge, Price's Sweet and Plumb's Cider. The varieties of crab apples that are giving the best satisfaction are the Transcendent, Hyslop, Whitney's No. 20, Orange and Montreal Beauty; of strawberries, none excel the Wilson for all purposes. With the majority of growers, the Concord takes the lead in grapes in this district, though other varieties, as Delaware and Eumelan have strong friends.

Forest trees are being set quite extensively; Elm, Soft Maple, Cottonwood and Hackberry. The fruit tree business has been injured by the injudicious selling of fruit trees by agents and peddlers, thereby making it not only unprofitable and offensive to the planter, but unprofitable in the long run to nurserymen; for instance, varieties known by nurserymen and planters of experience to be only half hardy, having accumulated on their hands in nurseries, have been sold to farmers at very low prices; so low that no man of good sense could expect to receive a good, healthy tree; filling orders with small trees, with hardly any roots, when large ones were promised. The result is, buyers grumble and find fault when the trees come; they do the same when their notes are presented for payment; and when the trees finally die, as they usually do, they curse the business and the nurserymen. as a class, when all nurserymen are not to blame. As I stated in a former report, I think the nursery of Wilcox & Sons, at Trempealeau, is the only one in this district. Mr. Wilcox still sticks to his theory of hardy stocks on crab roots and standards budded in the branches. He finds many who agree with him, wholly or in part, and others who oppose the theory. He certainly has some nice trees worked in this way. But time will tell whether it is the correct way or not. The De Soto plum is quite popular here, where it has borne fruit.

ELEVENTH DISTRICT.

HON. JOHN E. THOMAS, SHEBOYGAN FALLS, COMMITTEE.

COUNTIES — *Sheboygan, Calumet and Manitowoc.* — Most of this territory borders on lake Michigan; and hence has a more even climate than the interior and western portions of the state; consequent-

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ly many varieties of fruit can be grown here that cannot be successfully cultivated in other localities. The surface is generally rolling, but not bluffy. The northeast part of Calumet, and small portions of other counties in the district, are level and marshy, and are mostly timber lands with a good supply of running water

Orchards do better on clay ridges and other uplands, than elsewhere, especially where oak was the prevailing tree in forest lands. Lands sloping gently to the north or northeast are best. Orchards are unsuccessful generally on sandy soils, and where sand predominates. As a rule, apples have not done well on heavy, red clay, or along the lake shore, for a distance of two or three miles back.

The variety of apples mostly raised in this district are, Tetofsky, Red Astrachan, Sops of Wine and Duchess of Oldenburg, for summer; Saxton, or Fall Stripe, Fameuse, Fall Pippin, Maiden's Blush, and in some localities Colvert, Fall Wine Sap and Haas, for fall, and Golden Russet, Tallman Sweet, Northern Spy, Ben Davis, a few Rhode Island Greenings, Gilliflower and some other varieties considered worthless in other parts of the state, for winter. At Sheboygan Falls one orchard has a few Newtown Pippins, that bear abundantly every alternate year. Crabs of every variety do well throughout the district.

Grapes are not cultivated to any great extent, except in a very few favored localities, and in fact no extensive vineyards are found here. All in all, the Concord is the best adapted as far as tested, but the Janesville is growing into favor wherever properly tested. Other small fruits, except currants, are not grown to any marked extent. Strawberries and Raspberries do well when properly cared for, and pay abundantly for the labor expended.

Pears are not grown to an extent worthy of mention. Flemish Beauty is probably the best for this district. Plums have been nearly a failure for several years past. Curculio "did the business." They were formerly grown here in great abundance and variety along the lake shore; even now a good yield is had quite often. Breezes from the lake shore seem to be unpleasant for that pest, the curculio. Lombard and Yellow Egg are best. Miner is hardy, but produces nothing to speak of. Cherries are reliable and abundant bearers. "Old-fashioned Red," Early Richmond and English Morello are popular.

Fruit-tree planting about an average with former years; trees have done well the past year. Ornamental trees are cultivated but little outside of cities and villages. Lombardys and Cottonwood are popular, because of quick growth, but Elm and Maple (Sugar) are both quite common.

The apple crop the past season was quite light, and much anxiety is felt for next year, in view of the extraordinary weather from November to the present time. Soft maple, cottonwood and lilacs have budded in many localities, while raspberries have fruited the second time near this village, and the writer had ripe strawberries from his vines (Wilson) in November.

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TWELFTH DISTRICT.

J. M. SMITH, GREEN BAY, COMMITTEE.

COUNTIES — *Brown, Kewaunee, Door and Oconto.* — The fruit crop in this district last season was light. The previous year almost every living apple tree in the district was loaded, and a light crop of apples was to be expected. I think there were at least as many in this district in proportion to the number of bearing trees we have, as in any portion of the state. But a small proportion of the apples used here are grown in the district. Few orchards are being put out, yet there is certainly an improvement in this respect within the last three or four years. Quite a number of farmers have set a few trees each, of some of the most hardy varieties. I visited an orchard a few days since of about 150 trees; it was set three or four years ago. The soil is a light yellow loam, with a clay subsoil. The natural drainage is good. The varieties are about as follows: twelve to fifteen pear trees, as many cherry, twenty-five to thirty crabs, and the balance, apple trees, divided among Tetofsky, Red Astrachan, Duchess, Fameuse, Utter, Walbridge, and possibly one or two others. The pear trees look fairly well. Cherries have done poorly and will probably fail. The crabs look splendidly and will doubtless pay well. They are principally the Transcendent and Hislop. No blight. Of the apples, the Utters are about gone. Red Astrachan does not promise very well. The Duchess and Tetofsky a little better. The Walbridge and Fameuse both promise well, thus far, the first named being perhaps a little the best. The above is probably as favorable a showing as the average of the setting of late years, and much more so than that of former years. I think we are improving, though the improvement is far from being as rapid as we could desire, and it is evident that the perfect orchard for this portion of the state is yet to come. The grape crop was good, and it is a great mistake that a great many more of them are not set out. The Delaware, Concord, and the best of Rogers hybrids do splendidly with us, wherever they have had a fair chance; I do not know of an exception. Strawberries were a fair crop. The Wilson is still the standard berry for the market. Currants were a fair crop; my own was very large, and it seems as if they might be made to produce their annual yield with about as much regularity as the summer follows winter and spring. It is twenty years since my bushes began to bear where I now live, and in that time they have never once failed to be thoroughly loaded with fruit. Gooseberries are but very little cultivated. Raspberries were but a moderate crop; the wild ones as well as the wild blackberries, were an entire failure. Blackberries are not cultivated, as the wild ones are so plenty, as well as so good, that the cultivated varieties could not be made to pay expenses.

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SUMMARY OF METEOROLOGICAL OBSERVATIONS TAKEN AT THE UNIVERSITY OF WISCONSIN

For the Year 1876.

Month.	Thermometer Exposed in Open Air.				Barometer, Height Reduced to 32°				Inches of rain and melted snow.	Amount of cloudiness.	Percentage of saturation.	Percentage of Winds.							
	Max.	Min.	Mean.	Variation.	Max.	Min.	Mean.	Fluctuation.				S.	SW.	W.	NW.	N.	NE.	E.	SE.
January	46	— 6	24.5	52	29.455	28 108	28.934	1.352	2.31	.4	91	19	29	12	22	2	9	0	7
February	51	—12	24.3	63	29.443	28.417	28.934	1.026	1.60	.6	91	23	16	15	20	8	6	5	7
March	58	0	27.8	58	29.417	28.064	28.955	1.353	2.27	.6	93	11	8	7	21	21	14	14	4
April	66	30	49.4	36	29.336	28.343	28.880	.993	2.65	.5	72	5	23	16	12	5	14	2	24
May	83	36	59.5	47	29.321	28.601	28.696	.720	5.18	.4	69	8	33	2	21	3	12	8	13
June	87	42	68 2	45	2).068	28.421	28.801	.647	4.57	.6	77	26	28	13	13	1	4	2	15
July	89	61	74.5	28	29.187	28.709	28.980	.478	4.14	.4	70	24	13	11	8	19	8	9	9
August	90	56	73.1	34	29.189	28.712	28.960	.477	3.42	4.5	72	33	7	16	22	0	3	4	16
September	79	36	59 8	43	29.168	28.247	28 835	.921	3.41	4.9	77	0	9	10	21	21	15	20	4
October	66	23	45.8	43	29.232	28.42)	28.853	.812	1.59	4.4	74	9	31	25	21	5	2	1	6
November	56	14	35.6	42	29.350	28.600	28 929	1.750	2.31	.7	88.2	11	11	20	31	22	1	2	2
December	41	—22	11.1	63	29.580	28 415	29.064	1.165	2.59	.5	86.3	8	16	16	46	7	4	0	3
Sums	812	258	553.6	554	351.746	341.052	347.044	11.694	36.04	18.5	106 3	166	222	162	237	114	92	67	110
Means	68	22	46.1	46	29.312	28.421	28.920	.975	3.00	1.5	89	14	19	13	21	9	8	5	9

For the Year 1877.

January	43	—16	13.9	59	29.500	28.700	29 087	.800	1.00	4.3	87	24	29	21	4	17	2	0	3
February	53	15	33.6	37	29.340	28.472	29.108	1.088	.30	3.7	86	6	7	32	9	37	0	6	3
March	54	— 2	23.2	56	29.331	28.049	28.988	1.282	3.40	4.2	84	11	11	19	9	26	15	2	7
April	74	18	45.3	56	29.354	28.360	28.977	.994	.....	4.5	74	19	5	10	2	36	15	8	5
May	83	34	60.7	49	29.398	28.542	28.991	.856	1.02	3.9	73	49	0	3	2	9	9	23	5
June	81	47	65.9	34	29.092	28.589	28.866	.503	4.77	4.2	79	38	16	15	6	11	3	9	2
July	88	57	73.0	31	29.275	28.687	28.921	.588	3.84	3 1	73	19	16	19	21	8	4	5	8
August	86.5	59	67.8	27.5	29.156	28.508	28.842	.648	3.76	2.9	69	15	12	13	25	23	3	5	4
September	86.0	47	65.8	39	28.934	28.456	28.705	.478	.61	3.0	71	23	23	14	11	2	16	2	9
October	78	33.5	51.2	44.5	28.974	28.396	28.702	.578	4.12	6.4	75	3	25	10	21	12	18	2	6
November	49	10	34.7	39	29.126	28.157	28.724	.969	2.81	6.5	77.5	6	25	17	21	18	8	0	5
December	58.5	15	38.7	43.5	29.085	28.401	28.750	.684	2.01	6.3	.....	16	32	1	12	12	17	5	5
Sums	.....	.....	.....	.....	.....	.....	.....	.....	27.67	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	.....	.....	47.6	.....	.....	.....	24.100	.....	.....	4.4	.....	19	17	15	12	18	9	5	5

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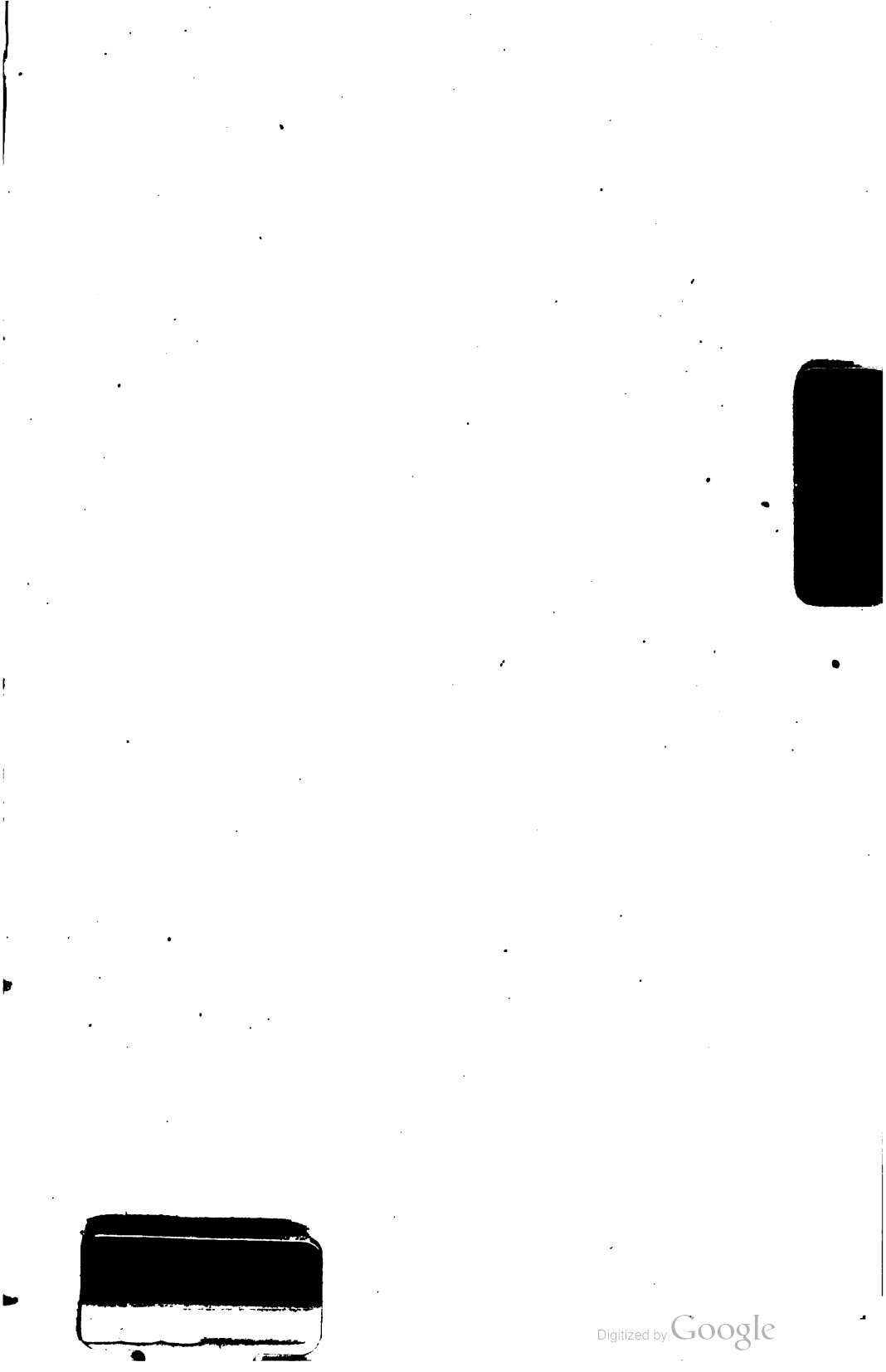
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